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# STUDIES IN THE DERMAPTERA AND ORTHOPTERA OF COLOMBIA

## SECOND PAPER

## DERMAPTERA AND ORTHOPTEROUS FAMILIES BLATTIDAE, MANTIDAE AND PHASMIDAE

BY MORGAN HEBARD

Since our first paper of this series,[1] very important collections have been received from our friends, Hermano Apolinar Maria, of the Instituto de la Salle, at Bogotá, and Mr. M. A. Carriker, Jr., of Santa Marta. As a result, our second paper furnishes additional data on the same sections treated in our first study.

Of the material here considered two collections are of particular importance, in being from two faunal areas virtually unknown from an Orthopterological point of view.

The largest of these is from the border of the Llanos in the Orinoco drainage, at Villavicencio, Intendencia del Meta, 1400 feet, and at Susumuco, Cundinamarca, 2600 feet. The latter locality is apparently not as rich as the former, being at an elevation over a thousand feet higher on the eastern slope of the Eastern Andes. Though Villavicencio is on the edge of the Llanos, the material so far studied would appear to be all, or in large part, from the lower mountain forest, similar to, but probably richer than, the forests about Susumuco. In this series thirty species are here recorded, of which seven are described as new. This material was secured from time to time for Hermano Maria and forwarded to us for study.

The other collection of particular interest was made by Mr. Carriker on a trip through the Colombian Chocó, during the summer of 1918. The material here recorded is from El Tambo, Boca Murindó and Murindó, Intendencia del Chocó, and from Andagoya in that portion of Antioquia which extends into the region known as the Chocó. Of the eighteen species here recorded, five are new to science.

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[1] Trans. Am. Ent. Soc., XLV, pp. 89 to 179, (June, 1919).

The correlation of the life zones found in Colombia, the probable channels of distribution, a general discussion of the country and comparison with other regions, from an Orthopterological point of view, will be treated in a later paper of this series. The present time would be premature for any deductions from these preliminary studies of the Dermaptera and Orthoptera of that country, so extensive and intricately diversified.

We have been able to determine the elevation (in feet) for the following localities given in the present paper. Anolaima 5964, Bogotá 8750, Choachi 5900, Cincinnati 4500, Espinal 1000, Fusagasugá 5464, Las Mesitas 3200, Mamatoco 50, Santa Marta 0, Susumuco 2600, Villavicencio 1400.

In this study three hundred and eighty-one specimens are recorded, representing sixty-seven species, of which nineteen are new to science, these including four new genera. Unless otherwise stated this material is in the Hebard Collection at the Academy of Natural Sciences of Philadelphia.

We wish to thank most heartily both Hermano Maria and Mr. Carriker for their aid in our studies of the Orthoptera of Colombia. No such series would have been available for study without the painstaking and long continued effort of these kind friends.

## DERMAPTERA

### LABIDURIDAE

### PSALINAE

**Mandex apolinari** (Hebard)

1919. *Psalis apolinari* Hebard, Trans. Am. Ent. Soc., XLV, p. 90, pl. XVI, fig. 1. [♀; Pamplona, Santander, Colombia.]

Though noting the probability of generic distinction of this species from *Psalis*, we unfortunately failed, in our first Colombian paper, to remark Burr's proposal of the genus *Mandex*, to include *Anisolabis peruviana* Bormans,[2] based on characters of the metaparameres.

We are satisfied that *peruviana* and *apolinari* are congeneric, and with the distinctive feature of the metatarsus, which we have described for the latter species, we consider *Mandex* a valid and distinct entity.

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[2] Journ. R. Microsc. Soc., 1915, pp. 524 and 533, (1915).

**Psalis americana** (Beauvois)

1817. *Forficula americana* Beauvois, Ins. Rec. Afr. Amér., p. 165, Orth., pl. XIV, fig. 1. [San Domingo.]

El Tambo, Intendencia del Chocó, IV, 5, 1918, (M. A. Carriker, Jr.), 1 ♂, 1 large juv. ♂, 1 medium juv.

The adult before us agrees fully with Panamanian individuals of this species which we have recorded, of the large winged type, showing over half of the tegmina occupied by a broad transverse orange band.

**Spandex rosenbergi** (Burr)

1899. *Psalis rosenbergi* Burr, Ann. Mag. Nat. Hist., (7), IV, p. 253. [♂, ♀; Paramba, Chimbo and Cachabé, Ecuador.]

El Tambo, Intendencia del Chocó, IV, 5, 1918, (M. A. Carriker, Jr.), 1 ♂.

Burr's generic assignment of this species is, in our opinion, fully warranted. One of the most distinctive features of *Spandex* has, however, never been noted. This character, is that in the male subgenital plate a small but sharp emargination occurs mesad on the distal margin, a very small agglutinated tuft of hairs on each side springing from poorly defined sockets on the apices of the lateral portions thus formed. Hasty examination of this feature would cause one to suppose that reduced styles were present. In no other genus of American Dermaptera is an analogous development found.

Burr has chosen *Psalis pulchra* Rehn as genotype of *Spandex*.[2] No reason is given for resurrecting this name, which we find to be a synonym of *Forficula percheron* (Guerin and Percheron), as had been previously indicated by Burr. The genotype of *Spandex* is, in consequence, *percheron*.

We place *rosenbergi* in this genus without hesitation, to which *haenschi* (Burr) also apparently belongs. Burr's tentative assignment of *Psalis festiva* Burr to *Spandex* we believe to be incorrect, as material from Venezuela referable to that species, in the Philadelphia Collections, is properly assignable to *Psalis*. The other species tentatively assigned to *Spandex* by Burr, *Psalis nigra* Caudell, we do not know.

The specimen here recorded, compared with Burr's description of *rosenbergi*, differs in features which appear to be due rather

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[3] Journ. R. Microsc. Soc., 1915, p. 524, (1915).

to descriptive inaccuracy than to real differences of importance. Thus the anal segment is scarcely "medio valde quadrato-emarginatum," but similar to that of *percheron* and best characterized as showing, between the bases of the forceps, a transverse depression. "Pygidio nullo" is of course incorrect, this portion being as in *percheron,* while the subgenital plate is as described above rather than "medio apice sulcata."

The present male is readily distinguished from a pair of *percheron* before us, from Trinidad, in the Philadelphia Collections, by the head being as dark as the pronotum; the heavier, slightly more hairy and slightly lighter brown abdomen with lateral angles of distal abdominal tergites sharper and distinctly keeled; anal tergite medio-longitudinally carinate distad, toward the forceps with sculpturing of dorsal surface more pronounced, and buffy limbs with femora all showing a single broad and dark annulus.

# ORTHOPTERA

## BLATTIDAE

### ECTOBIINAE

### **ASEMOBLATTA**[4] new genus

The only known species of this genus has the general appearance of a rather short winged species belonging to, or near, the genus *Cariblatta.* Examination, however, shows it, in our opinion, to be a member of the Ectobiinae.

The head is very short, forming approximately an equilateral triangle. In this feature close agreement with the Ectobiine genus *Lissoblatta* is shown, but also similarity to the Oxyhaloid genus *Chorisoneura.* The head is of an entirely different structure in all forms of the Pseudomopinae of the Group Blattellae, where this insect would necessarily be assigned in that subfamily. The armament of the limbs is weak, the ventro-cephalic margins of the cephalic femora supplied with a row of minute piliform spines, these features of apparently no assistance in placing this insect. The pronotum is strongly transverse caudad, thus showing a type frequent in the Group Blattellae of the Pseudomopinae, rare in the Ectobiinae. The somewhat reduced tegmina have the discoidal and median veins parallel and alone distinct, with branches of the latter (discoidal sectors) oblique. This agrees with one of the more usual types of tegminal venation in the Ectobiinae, but where tegminal reduction has occurred in certain Pseudomopids (such as is found in certain species of the genus *Latiblattella*) the results are practically the same as here shown. The male supra-anal plate is well produced, this of little significance except that a large number of Ectobiid species have this plate strongly transverse. The short fourth joint of the tarsi is alone supplied with a pulvillus, which occupies its entire ventral surface. The tarsal claws are asymmetrical and unspecialized, a condition frequent in Ectobiids, but also of a type developed in those Pseudomopids to which this insect might be supposed to show nearest affinity.

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[4] From ἄσημος = insignificant, or without device.

Careful consideration of the evidence convinces us that, though aberrant in some features, the insect is a member of the Ectobiinae. We consider the genus nearest *Lissoblatta*, differing in the broader head with much broader interocular space, distinctive pronotum, which is proportionately much larger with caudal margin transverse, vestigial wings, much shorter and heavier cerci and more Plectopterine male genitalia.

The genus is monotypic. *Genotype.—Asemoblatta nana* new species.

*Generic Description.* Size moderately large for this group of very small roaches; form very stout, elliptical, surface smooth and shining. Head triangular, very slightly longer than broad, interocular space very wide, ocellar areas very poorly defined, ocellar spots very weak. Pronotum relatively large, showing a weak transverse depressed area meso-cephalad, broad caudal margin transverse, truncate, disk distinctly octagonal in outline. Tegmina in form and general type of venation much resembling the type developed in *Lissoblatta*, broad, costal margin convex to the well rounded apex, discoidal sectors oblique. Wings represented by atrophied pads. Dorsal surface of male abdomen conspicuously specialized. Male cerci very short and heavy, much shorter and heavier than in *Lissoblatta* and *Anaplecta*. Male supra-anal plate produced, even more so than in *Lissoblatta*. Male subgenital plate and appendages specialized, of a Plectopteroid type. Cephalic femora, as in *Lissoblatta*, with ventro-cephalic margin armed with a long row of closely placed, short, microscopic, piliform spines, terminating in two elongate distal spines, of which the more distal is slightly the longer; ventro-caudal margin supplied with an elongate spine distad. Median and caudal femora supplied on all ventral margins with elongate hairs and a single elongate distal spine (and in addition from none to one elongate spines). Caudal tarsi with fourth joint alone supplied with a pulvillus, which occupies its entire ventral surface. Tarsal claws asymmetrical, unspecialized. Arolia very large. In these three latter features agreeing with *Lissoblatta*, but also with *Chorisoneura*.

**Asemoblatta nana** new species (Plate VIII, figs. 1 to 3; plate X, figure 28.)

The affinities of this diminutive and anomalous species are discussed under the generic treatment.

*Type.*—♂; Bogotá, Cundinamarca, Colombia. Elevation, 8750 feet. November 24, 1914. (From A. Maria.) [Hebard Collection, Type no. 542.]

In addition to the features given in the generic discussion, we would add the following. Interocular space slightly wider than that between the antennal sockets. Maxillary palpi with enlarged fifth (distal) joint subequal in length to fourth, longer than third. Pronotum with cephalic margin evenly convex to the latero-caudal angles.

Tegmina slightly reduced, reaching to base of supra-anal plate,[5] anal sulcus very inconspicuous, (nine) costal veins well spaced, without intervening spurious veinlets, delicate discoidal sectors oblique (three in sinistral tegmen; none in dextral tegmen, which area is concealed when the tegmina are at rest). Wings atrophied, represented by elongate-oval lateral pads, extending slightly beyond caudal margin of metanotum, showing only a heavy, bifurcated discoidal vein. Sixth tergite highly specialized mesad,[6] in a large depression there found a transversely convex ridge occurs with cephalic face supplied with a tuft of agglutinated hairs directed cephalad.

Supra-anal plate triangular with apex bluntly rounded, in length two-thirds proximal width. Subgenital plate Plectopteroid, with two heavy, cylindrical, convergent styles, situated in deeply inset sockets, these styles about twice as long as wide with apices tapering, the sinistral thickened throughout, slightly shorter and heavier in distal half than the dextral. The median section of the subgenital plate is narrowly triangularly produced, directed obliquely dextrad and pressed between these styles.

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[5] So called generally in descriptions of the Blattidae, it is actually the ninth tergite; the tenth, or true supra-anal plate disappears in this family before the adult condition is reached.

[6] Of the same type as in *Lissoblatta*, but more decidedly developed.

Head prout's brown. Limbs and underparts buckthorn brown, except laterad on abdomen where the coloration is much darker, broadly blackish brown latero-proximad. Lateral margins of pronotum and tegmina transparent, tinged with buckthorn brown. Disk of pronotum prout's brown, with a few flecks of darker coloration. Mesonotum, metanotum and median segment cinnamon brown. Abdomen, to sixth tergite, blackish brown, with paired transverse median blotches of cinnamon brown on each segment, which decrease in size caudad, remaining entire distal portion of dorsal surface of abdomen cinnamon brown, except proximal portion of sixth tergite, which is blackish brown.

Length of body, 7; length of pronotum, 2; width of pronotum, 2.9; length of tegmen, 5.7; greatest tegminal width, 2.2; length of caudal tibia, 2.7 mm.

The type of this remarkable species is unique.

### PSEUDOMOPINAE.

**Chromatonotus andagoyae** new species (Plate VIII, figures 4 and 5; plate IX, figure 17.)

The present species is closely related to *C. notatus* (Bruner), with a large series of which species from Trinidad, in the Philadelphia Collections, we have compared it.

Superficially *andagoyae* is seen to be somewhat larger, with pronotal discal marking weaker but similar in position, while the tegmina are not darkened along the humeral trunk and the wings have the area of the enlarged portion of the costal veins dark and unicolorous.

The male genitalia are very distinctive, the highest specialization occurring in the paired plates beneath the supra-anal plate, as is true of the other species of the genus.

*Type.*—♂; Andagoya, Antioquia, Colombia. April 22, 1918. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 539.]

In addition to the generic characters recently given,[7] we would note the following.

Size slightly larger than *notatus*, hence the largest known species of the genus. Interocular width three-quarters that between the large and conspicuous ocellar spots, distinctly less than length of first antennal joint. Enlarged fifth (distal) joint of maxillary palpus intermediate in length between that of third and fourth joints. Wing with width of anterior field slightly over one-fifth its length.

Supra-anal plate weakly transverse, length slightly over three-quarters proximal width, free margins rather strongly convex to meso-distal portion, where mesad a very slight, broadly obtuse-angulate emargination is apparent. Cerci small, elongate and slender, the twelve joints with sutures well marked, the lateral margins of the joints nearly straight, but each (from the sixth to eleventh) distinctly narrower than its predecessor; dorsal surface flat; ventral surface of each joint strongly convex, with very narrowly cingulate lateral margins. Paired plate beneath supra-anal plate highly specialized; sinistral half chitinous, flattened against wall of anal orifice, with a moderately stout process below base of sinistral cercus directed caudad, this process dividing into two slender branches distad, the ventral of which is twice the length of the dorsal and very slightly thickened and decurved distad. Dextral half of this plate developed into a large chitinous ridge, from which extends ventro-sinistrad a process which is heavy in proximal three-fifths, but from that point is slender, tapering gradually to its acute apex, this process showing a weak curvature dorsad, its ventral margin armed with a few irregularly placed teeth. Subgenital plate supplied with elongate scattered hairs, rather strongly convex except in distal area between the styles, where it is flattened and slopes to the free margin. Free margin of subgenital plate convex to each of the styles, showing emargination toward the bases of each of these. Sinistral style minute, straight, simple, cylindrical, feebly tapering to its sharply rounded apex, nearly four times as long as its basal width. Dextral style half as large, its dorsal surface armed with four minute teeth directed caudad, the basal one of which is dextrad of the line formed by the others. Exposed ventro-lateral portions of eighth tergite, which are folded over the lateral portions of the subgenital plate, large, extending nearly as far caudad as the subgenital plate itself.

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[7] Hebard, Mem. Am. Ent. Soc. no. 4, p. 45, (1920). Though the dorsal surface of the male abdomen would appear to be best termed unspecialized in the species of this genus, the median segment is supplied with hairs in a transverse area, these hairs becoming thickly placed mesad.

Head blackish chestnut brown; ocellar spots, proximal antennal joints, palpi and mouthparts buffy, remaining portions of antennae chestnut brown. Limbs buffy, with spines slightly darker, except portions of the coxae, and cephalic femora at base, which are suffused with blackish. Abdomen above and below, ochraceous-tawny mesad, shading to chestnut brown laterad, with margins cinnamon-buff. Cerci chestnut brown. Pronotum dull ochraceous-orange, the caudal margin chestnut brown, the maculation running cephalad from the humeral angles as a weaker suffusion of cinnamon-brown to the cephalic portion of the disk, where these darker areas broaden toward each other, reuniting to form a vague transverse cinnamon-brown band, intensifying mesad on each side, so that twin blotches of chestnut brown are formed. Tegmina transparent, richly tinged with antique brown, except toward the costal margin, which is broadly buffy, the one coloration shading gently into the other. Wings transparent, very weakly tinged with prout's brown, this very heavy in entire area of costal veins.[8]

Length of body, 11.3; length of pronotum, 3; width of pronotum, 3.9; length of tegmen, 11.7; width of tegmen, 3.3 mm.

The type is unique.

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[8] In this feature *andagoyae* agrees with *C. lamprus* Hebard, described from Panama. In *notatus* the area of the costal veins is heavily tinged with prout's brown to near the free margin, the narrow marginal portion being buffy.

## SCIABLATTA [9]

This genus is nearest *Rhytidometopum,* differing in the larger size, broad form, uniform and pale coloration, moderately broad and unspecialized interocular space, broader tegmina, wings with weakly clubbed costal veins and different type of male genitalic specialization.

The pale immaculate coloration suggests the more usual type in *Neoblattella* and, to a lesser degree, certain species of *Latiblattella.*

The form is broad, more nearly as in *Platylestes* and the broader species of *Latiblattella,* and in fact the general superficial appearance suggests a longer winged species near *Latiblattella pavida* (Rehn).

The genus is monotypic. *Genotype.—Sciablatta mamatoco* new species.

*Generic Description.* Sexes similar, with tegmina and wings fully developed. Size medium large for the Group Blattellae, form broad for the group. Tegmina very delicate, with discoidal sectors oblique. Wings with costal veins weakly clubbed, ulnar vein with few branches, intercalated triangle present. Dorsal surface of male abdomen specialized. Cerci very elongate and slender. Subgenital plate of male fused and specialized with the lamellate styles. Subgenital plate of female full, showing no distal cleft or emargination. Ventro-cephalic margin of cephalic femora with a row of spines which decrease gradually in length distad, terminating in three heavy distal spines. Ventro caudal margin of cephalic femora armed with (three or four and one distal) spines. Moderately well developed pulvilli present on four proximal tarsal joints. Tarsal claws symmetrical and unspecialized. Arolia present.

**Sciablatta mamatoco** new species (Plate VIII, figures 6 and 7.)

The combination of characters given in the generic diagnosis shows that this species is widely distinct from all previously known forms, showing nearest affinity to species having a very different general appearance.

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[9] From σκιὰ = shadow.

*Type.*—♂; Mamatoco,[10] Magdalena, Colombia. Elevation, 50 feet. December, 1917. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 538.]

In addition to the generic features already given, we would note the following for the present species. Interocular space four-fifths that between the antennal sockets. Inter-ocular-ocellar area flattened. Ocellar spots large, their areas showing no defining contour. Lateral margins of cheeks weakly convergent ventrad. Maxillary palpi missing. Tegmina with numerous discoidal sectors (twelve to thirteen). Wings with (eight to ten, the variation caused by distal branching) complete branches of the ulnar vein. Fifth tergite with broad median section shallowly concave; sixth with broad median section slightly more deeply concave, with a slightly raised mediolongitudinal V-shaped area, its lateral margins slightly convex and thickly supplied with agglutinated hairs directed caudad, the caudal margin subchitinous and weakly and broadly emarginate mesad; seventh and eighth tergites transversely narrower, exposed very narrowly along their caudal margins.

Supra-anal plate triangular with apex broadly rounded, its length two-fifths its basal width. Cerci slender and elongate, tapering to acute apex, the joints (thirteen in allotype, damaged in type) well defined, the lateral margin of each nearly straight, the dorsal surface weakly convex, the ventral surface decidedly convex between the narrowly lamellate lateral margins. Paired plate beneath supra-anal plate large and unspecialized. Titillator with chitinous distal portion short and heavy, terminating in a sharp decurved point. Subgenital plate with proximal portion very weakly convex, laterodistal portions slanting sharply upward, their dorsal margins weakly sinuous, transverse to the styles. The latter are represented by lamellate plates, moderately convex externally, broadly hinged to the lateral portions of the subgenital plate, vertical and directed caudad, slightly deeper than long, with free margins convex, particularly distad. The brief median portion of the free margin of the subgenital plate between these is triangularly produced dorsad, its distal portion slender, slightly thickened and curved caudad, with apex sharp but unarmed, this portion with height equal to its basal width.

Caudal metatarsus supplied with a large rounded distal pulvillus, succeeding three joints with ventral surfaces fully occupied by large pulvilli (from immature example, caudal metatarsi missing in type and allotype).

*Allotype.*—♀; same data as type. [Hebard Collection.]

Agrees fully with male in most ambisexual features, differing in the following respects. Size larger; tegmina and wings fully developed in similar proportion. Interocular space very slightly wider. Inter-ocular-ocellar area slightly less decidedly flattened. Dorsal surface of abdomen unspecialized. Supra-anal plate one-third as long as basal width, triangular but bilobate at apex, this due to a short medio-longitudinal distal cleft, which is not complete, the chitinous margins being connected by soft integument. Subgenital plate ample, scoop-shaped, not strongly produced, free margins convex, except at bases of cerci, where moderate emargination is found.

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[10] This locality is four and one-half miles from Santa Marta, in the arid coastal region.

Coloration generally similar in the sexes. Antimony yellow, in the female showing a slightly more ochraceous tinge. Disk of pronotum with a very weakly defined pair of slightly darker median flecks. Tegmina nearly transparent, with veins and numerous transverse veinlets pale buffy, the intervening minute areas tinged with the general coloration; so that the tegmina, under high magnification, are seen to be delicately and minutely tessellate. Wings transparent, very faintly tinged with buffy, this very slightly stronger in area of costal veins. The deepest coloration is on the dorsal surface of the abdomen, which is antimony yellow, washed with ochraceous orange.

Length of body, ♂ 12, ♀ 13.5; length of pronotum, ♂ 3.3, ♀ 4; width of pronotum, ♂ 4.8, ♀ 5.8; length of tegmen, ♂ 13.7, ♀ 15.2; greatest width of tegmen, ♂ 4.3, ♀ 4.9 mm.

In addition to the described pair, a female, in the last instar preceding maturity, bearing the same data, is before us.

**Neoblattella albida** (Saussure)

1869. *Blatta albida* Saussure, Rev. et Mag. de Zool., (2), xxi, p. 110. [♂, Bogotá, [Colombia].]

Bogotá, Cundinamarca, XI, 24, 1914, (from A. Maria), 1 juv. ♀.

This immature example would appear to represent the present species, described from the same locality. Until the type is analyzed or more material is seen from that region, the exact position of *albida* remains in doubt.

**Neoblattella antioquiae** new species (Plate VIII, figure 8.)

The present insect is a member of the Impar Group of the genus. It is apparently closely related to *N. albida* (Saussure), differing in features of coloration, but particularly in the very high and intricate specialization of the male subgenital plate.

As in *albida*, the distal cross-veinlets of the tegmina are strikingly darkened.

*Type.*—♂; Andagoya, Antioquia, Colombia. April 22, 1918. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 543.]

Size large for the Impar Group, form rather slender. Interocular space four-fifths as wide as that between the antennal sockets, ocellar spots weakly defined. Maxillary palpi very elongate, fifth joint three times as long as greatest width, three-quarters as long as fourth joint, which is slightly shorter than the very slender third joint. Pronotum as in *N. acanthastylata* Hebard, as characteristic of the Impar Group.

Tegmina delicate, with (seven sinistral, six dextral) longitudinal discoidal sectors, cross-veinlets decided and strikingly colored distad and in area of dextral tegmen concealed when at rest. Wings delicate, proximal (seven) costal veins heavily clubbed distad, this and the coloration of this area as described for *albida*, ulnar vein with (five) complete branches, intercalated triangle small. Abdomen with dorsal surface unspecialized, except that the sixth tergite bears mesad a few scattered, microscopic hairs.

Supra-anal plate transverse, with free margins straight and nearly transverse, weakly oblique to less than median third, where the plate is produced in a moderately deflexed area, twice as wide as long, with brief lateral margins straight but rounding without angulation into the broadly convex caudal margin. Paired plates beneath supra-anal plate unspecialized. Cerci elongate and slender. Subgenital plate with sinistral portion straight, curled briefly upward, its margin straight, oblique, at the apex of the channel thus formed is situated an elongate, slender, flattened process (probably the sinistral style), over three times as long as its basal width, directed in the same line and consequently meso-distad, tapering from its proximal quarter to the sharply rounded apex and decurved in distal fourth. Adjacent to this dextrad is a similar process (probably the dextral style), springing from an almost obliterated socket, slightly more elongate, bearing in the same direction proximad but curving sinistrad in the distal portion, so that the apex is above but beyond that of the sinistral process, these two processes have their dorsal surfaces proximad armed with rather closely placed, erect, microscopic, conical teeth. Adjacent to these processes dextrad is a third, very slender process, slightly the shortest of the three, cylindrical but somewhat irregular in contour, unarmed, straight and directed more strongly dextrad than the others. From this process the free margin of the plate is feebly concave, moderately oblique to the dextral section of the plate. Dextral section of subgenital plate with lateral margin straight to beyond cercal base, in this portion sharply folding inward at the margin and forming a lamellation with dorsal surface very strongly concave, thus embracing the proximal portion of the dextral style. So complex is the subgenital plate that reference to plate VIII, figure 8, is recommended.

Limbs and armament as in *acanthastylata*[11] (except that the flange of the tarsal claws is armed with seven teeth, though the three more distal ones are the more conspicuous).

General coloration buffy, tinged with tawny olive. Head of this coloration with four transverse suffused bands of darker brown, the heaviest between the ventral margins of the eyes, the next between the dorsal margins of the ocellar spots, the next between the ventral margins of the ocellar spots and the last very weakly indicated above the clypeus, the three last broken mesad. Pronotum with disk ochraceous-buff, pictured with delicate lines, and a blotch later-caudad on each side, of cinnamon brown and dots of deep mars brown; marginal portions hyaline with a faint buffy tinge. Tegmina and wings hyaline, cross-veinlets of tegmina distad heavily suffused with prout's brown; veins, spurious veins and cross-veinlets in area of dextral tegmen, concealed when at rest, heavily tinged with prout's brown. Wings transparent, tinged with prout's brown, except in narrow area between bases of costal veins which is solidly prouts brown, as are the clubbed apices of the same, which area is paler as described for *albida*. Dorsal surface of abdomen blackish brown, shading to buckthorn brown proximad, with broad mesoproximal area of each tergite buckthorn brown; the supra-anal plate buckthorn brown, suffused with blackish brown in median section of produced portion and heavily but narrowly above the cercal bases. Limbs ochraceous-buff, with dorsal surface of cephalic femora suffused with cinnamon brown and flecks of very dark brown at the bases of the spines. Cerci ochraceous-buff, dorsad with extreme tip blackish, ventrad with median sections of the five largest joints suffused with blackish brown.

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[11] Mem. Am. Ent. Soc., no. 4, p. 55, (1920).

Length of body, 12.5; length of pronotum, 3.2; width of pronotum, 4; length of tegmen, 13; width of tegmen, 3.9 mm.

The type is unique.

**Blattella germanica** (Linnaeus)

1767. [*Blatta*] *germanica* Linnaeus, Syst. Nat., ed. XII, p. 668. [Denmark.]

Bogotá, Cundinamarca, 1 ♀, [U. S. N. M.].

**Ischnoptera morio** Burmeister

1838. *I*[*schnoptera*] *morio* Burmeister, Handb. Ent., II, abth. II, pt. I, p. 500. [Colombia.]

Susumuco, Cundinamarca, V, 1919, (from A. Maria), 1 ♀.

Villavicencio, Intendencia del Meta, XII, 1918, (from A. Maria), 1 ♀.

**Ischnoptera apolinari** Hebard

1919. *Ischnoptera apolinari* Hebard, Trans. Am. Ent. Soc., XLV, p. 102, pl. XVI, figs. 6 and 7. [♂, ♀; Choachi, Cundinamarca, Colombia.]

A topotypic series of one male and four females, taken in June, 1917, has been subsequently received from Hermano Apolinar Maria.

**Ischnoptera flagellifer**[12] new species (Plate VIII, figures 9 and 10.)

The present species shows close relationship to the Panamanian *I. gatunae* Hebard, agreeing fully in size, form, coloration and in fact all diagnostic features, excepting the very highly specialized and distinctive genitalia.

*Type.*—♂; Andagoya, Antioquia, Colombia. April 22, 1918. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 544.]

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[12] In allusion to the remarkable flagellate process, developed in the male genitalia of this species.

Size medium large, form slender. Interocular space narrow, about one-third as wide as that between antennal sockets, four-fifths as wide as interocellar space. Ocelli large and distinct, flattened surfaces of ocellar areas forming a moderately sharp angle with interocellar area. Maxillary palpi moderately short; fifth joint very slight longer than third. Latero-caudal sulci of pronotal disk pronounced.

Tegmina and wings extending beyond apex of abdomen nearly one and one-half times cercal length. Tegmina elongate and narrow, with portion of dextral tegmen, concealed when at rest, transparent, though slightly suffused. Dorsal surface of abdomen specialized as is characteristic of the genus.[13]

Supra-anal plate trapeziform produced, with latero-caudal angles broadly rounded and margin between weakly concave, all but the margins of the large produced portion weakly chitinous; subchitinous in a small meso-proximal area, just caudad of which the ventral surface of the plate is produced in a small rounded subconical projection, this projection about half as high as its basal width and crowned with a tuft of stout bristles, which are two-thirds as long as the proximal width of the projection; margins of plate fringed along the ventral surface with similar but shorter bristles and with a cluster of minute spines near the base of the dextral cercus.[14] Paired plates beneath supra-anal plate highly specialized; sinistral plate large, transverse, produced medio-longitudinally in an elongate, convex ridge, this plate armed dorso-proximad with a patch of minute but stout, short, sharp spines; dextral plate large, transverse, with caudal surface convex, the ventral portion thickened, rounded, its ventral surface armed distad with a large patch of minute but stout, short, sharp spines. At basal segment of sinistral cercus with an elongate flagelliform process, developed from its internal face, this slenderly cylindrical, chitinous, curving across beneath the supra-anal plate to the median line, there curving downward and finally curved caudad before its acute apex. At basal segment of dextral cercus with a heavy and much shorter flattened process directed sinistrad, then bent at its median point ventro-sinistrad, the distal half slenderly lanceolate, straight, with apex acute.[15] Subgenital plate hairy, strongly asymmetrical, surface convex except in produced portion, where it is moderately concave; with lateral portions vertical, the free margins thickened and curling narrowly inward proximad; dextral portion of free margin broadly convex to median third of plate, which is weakly convex, then nearly transverse to sinistral third, which section is moderately concave; at the weakly defined apex is situated a heavy style (dextral), bent strongly sinistrad from its base, about twice as long as the short, straight portion of its sinistral margin, tapering slightly to its rounded apex which is armed dorsad with minute teeth, immediately beyond the point opposite the apex of this style on the margin a (sinistral) style of half the bulk springs erect, straight, with more sharply rounded apex similarly armed; a brief distance dextrad of the heavier style springs another process, with base slightly thicker than its cylindrical shaft, nearly eight times as long as its median width or three times as long as the smaller style, erect, nearly straight, curving weakly caudad, with rounded apex armed dorsad with minute teeth.[16]

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[13] Described in Mem. Am. Ent. Soc. no. 2, p. 62, (1917).

[14] Examination of the type shows that this also occurs in *gatunae*.

[15] In *gatunae* the concealed genitalia are developed in the same general manner, but the dorso-sinistral projection is very much shorter, the patch of spines on the sinistral plate is larger and situated meso-distad, while the much higher specialization of the supra-anal plate causes the dextral plate to be very much smaller, no patch of spines occurring on this plate.

Limbs and armament of same as characteristic of the genus.

Head dark chestnut brown, ocelli light buff. Antennae, including first joint, mummy brown. Mouthparts, maxillary palpi, limbs and ventral surface of abdomen ochraceous-buff, the latter strongly tinged with cinnamon brown. Pronotum with disk heavily suffused with cinnamon brown in a vague pattern; lateral portions ochraceous-buff, this narrowly invading the disk cephalad of the latero-caudal sulci; caudal portions transparent. Tegmina translucent, dresden brown, the marginal field paler. Wings transparent, area between costal veins dark chestnut brown, shading to cinnamon brown toward the free margin and in the entire distal portion beyond the humeral vein, colorless between the dark chestnut brown principal veins. Dorsal surface of abdomen buckthorn brown, suffused laterad with prout's brown. Cerci prout's brown.

Length of body, 14.2; length of pronotum, 3.3; width of pronotum, 4.6; length of tegmen, 14.8; width of tegmen, 4 mm.

The type is unique.

**Ischnoptera implicata** new species (Plate VIII, figure 11.)

The present species is extremely close to the Peruvian *I. angustifrons* Hebard, being readily distinguishable only by the different development of the male genitalia within the anal chamber. In other respects, when compared with the male type of *angustifrons*, the unique male of *implicata* is seen to differ only in the considerably more slender form, very slightly wider interocular space, less ample pronotum showing the latero-caudal sulci of the disk more decided, supra-anal plate with more extensive subchitinous area, and minor differences of coloration.

*Type.*—♂; Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. June, 1918. (From A. Maria.) [Hebard Collection, Type no. 548.]

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[16] This process has the appearance of a third style and is a feature we have not noted in any other species of *Ischnoptera*, though the subgenital plate of *Neoblattella antioquiae*, here described, shows a somewhat analogous development.

Size large for the genus, form decidedly slender, more slender than in *I. vulpina* Hebard. Head with interocular space very narrow, its width slightly over one-quarter of a millimeter, half as wide as interocellar space and appreciably wider than in *angustifrons*. Ocelli and maxillary palpi as here described for *flagellifer*. Pronotum narrower than in *angustifrons*, much as in *flagellifer*, with latero-caudal sulci of disk pronounced.

Tegmina and wings decidedly elongate, slightly more elongate and slender than in *angustifrons*, venation as characteristic of the genus, as is the specialization of the dorsal surface of the abdomen.

Supra-anal plate broadly trapeziform produced with lateral portions convex, chitinous, curving moderately ventrad, the large median portion not as much raised, subchitinous, rectangulate, with length slightly greater than breadth, the distal free margin transverse. This plate bears on its ventral surface sinistro-proximad a marginal ridge armed with moderately elongate chaetiform spines, a fringe of similar spines being also present proximad along the ventral surface of the dextral margin.[17] Paired plates beneath supra-anal plate at basal segment of sinistral cercus produced dextrad in an elongate heavy process, which tapers evenly to the acute apex, its dorsal surface subchitinous,[18] sinistral plate below this moderately large and unarmed in visible portions.[19] Plate at base of dextral cercus, as described below, similar to homologous sinistral plate, but somewhat heavier and entirely chitinous[20]; dextral plate developed into four digits, the first and ventral developed into an elongate cylindrical clubbed process with apex armed with short sharp teeth, above this a very slender chitinous flagelliform process which curves ventrad across the surface of the remaining section of the plate, this latter portion produced dorso-mesad in a heavy clubbed process with apex armed with short sharp teeth, the dorsal margin of this portion deeply concave between the two clubbed processes and thus accomodating the flagelliform process[21]; above these the plate surrounds the cercal base as a heavy base to an elongate process, tapering evenly to its aciculate apex, weakly curving and directed meso-dorsad. Titillator with distal portion very slender and dorsal armament weak.[22] Subgenital plate convex except meso-distad where it is weakly concave and weakly triangularly produced. At the apex of this production is situated a cylindrical style, over three times as long as its median width, directed dorso-sinistrad, its base stout, its shaft cylindrical, with blunt apex covered with minute, short, stout spines. Sinistrad of this style is situated a small cylindrical style with unarmed apex rounded, slightly over half as long and distant from the larger style slightly over its own length. Subgenital plate with free margin dextrad decidedly convex to base of mesal production, where, with the almost straight, oblique dextral margin of this production, a distinct and broadly rounded concavity is formed; from the apex of the mesal production the sinistral portion of the free margin is nearly straight and oblique to the base of the plate.

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[17] In *angustifrons* the ventral surface of the supra-anal plate is supplied proximo-laterad with similar chaetiform spines, meso-sinistrad in the area of least chitinization with a heavy tuft of similar spines, directed caudad and slightly dextrad of the median line, with a weak irregular ridge distad bearing a moderate number of similar spines.

[18] In *angustifrons* the homologous process is smaller and bears a large sharp spine dorsad at end of proximal two-thirds, while from the soft integument above projects a delicate but chitinous, curved spine.

[19] In *angustifrons* much larger, with a few heavy teeth meso-dorsad.

[20] In *angustifrons* this process is forked, the lower portion heavy and rounded, bearing a distal spine, the upper portion irregularly curving dorso-dextrad, then caudad, then dextrad, tapering so that it is very slender in distal half, with apex acute.

[21] In *angustifrons* this plate is largely concealed, but apparently is not developed into armed processes.

Limbs as characteristic of genus.

*Allotype.*— ♀; same data as type. [Hebard Collection.]

Agrees with male except in the following respects. Size larger, form slightly more robust, much as in males of *vulpina.* Interocular space as broad as interocellar space. Tegmina and wings proportionately scarcely shorter than in male, extending beyond the cercal apices over twice the cercal length. Dorsal surface of abdomen unspecialized. Supra-anal plate strongly produced mesad, half as long as proximal width, the lateral margins concave, particularly proximad, the apex broadly rounded, projecting well beyond the caudal margin of the subgenital plate. Subgenital plate decidedly transverse, convex, with free margin evenly and broadly convex.

Head to ventral margins of ocelli shining blackish brown, there shading to cinnamon rufous with last two joints of maxillary palpi suffused with blackish brown, ocelli buffy. Pronotum tawny, very faintly paler laterad and cephalad. Tegmina translucent tawny, a shade darker than in *angustifrons*, the marginal field ochraceous-buff. Limbs and underparts ochraceous-buff, weakly tinged distad with cinnamon brown, the spines russet.[23] Dorsal surface of abdomen cinnamon brown, the subchitinous section of the male supra-anal plate paler.

In three females the latero-caudal sulci of the pronotal disk are suffused with slightly darker brown. All have the subgenital plate showing, to different degrees, a suffusion of blackish brown mesad along the caudal margin.

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[22] In *angustifrons* the distal portion of the titillator is much broader and more heavily armed, much as shown in Mem. Am. Ent. Soc., no. 4, pl. IV, fig. 8, (1920).

[23] In *angustifrons* the limbs are ochraceous-buff weakly tinged with tawny distad, the spines tawny.

Length of body, ♂ 15.5, ♀[24] 15.8, 15.7–15.8; length of pronotum, ♂ 3.6, ♀ 4.1, 4–4.1; width of pronotum, ♂ 4.5, ♀ 5.4, 5–5.2; length of tegmen, ♂ 17.3, ♀ 19.8, 17–17.9; width of tegmen, ♂ 4.4,[25] ♀ 5, 4.9–4.9; length of caudal femur, ♂ 6.7, ♀ 7, 6.1–6.7 mm.

In addition to the described pair, three female paratypes, bearing the same data, are before us.

**Xestoblatta poecila** new species (Plate IX, figure 18.)

The present species is the most strikingly colored form of the genus *Xestoblatta* which we have seen. The coloration, and particularly that of the pronotum, is distinctive. The species is apparently more nearly related to *X. nyctiboroides* (Rehn) than to the other species at hand. Discovery of the male sex is awaited with interest.

*Type.*—♀; Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. December, 1918. (From A. Maria). [Hebard Collection, Type no. 545.]

Size medium for the genus, form robust. Interocular space (1.2 mm.) four-fifths as wide as that between the antennal sockets. Ocellar areas weakly defined, but the convexity at their inner margins stronger than is usual in the genus. Pronotum as characteristic of *Xestoblatta.*

Tegmina and wings reaching beyond apex of abdomen a distance equal to the length of the caudal tarsal joints, with venation as characteristic of the genus. Wings with (five) complete and (four) incomplete branches of the ulnar vein. Abdomen with fourth, fifth and sixth tergites with latero-caudal angles acute-angulate produced caudad.

Supra-anal plate half as long as proximal width, triangularly produced between the cerci, with lateral margins rather decidedly concave and apex rounded. Subgenital plate little produced, with surface broadly convex; free margin evenly and rather broadly convex, showing weak flattening of this convexity beneath the cerci, with margin distad thickened, so as to cause an upper rim, but not briefly curled upward and inward.

Limbs as characteristic of the genus.[26]

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[24] For the females the allotype is given first, then the extremes in the paratypes.

[25] Distad 4.5, in *angustifrons* 4.7 mm.

[26] Described, Trans. Am. Ent. Soc., XLII, p. 370, (1916). The pulvilli and arolia have not been described for *Xestoblatta.* The three proximal tarsal joints are each supplied ventrad with a biseriate row of minute spines and distad with a large pulvillus, as broad as long with apex rounded, the short fourth joint with ventral surface fully occupied by a similar pulvillus. Arolia well developed between the simple, symmetrical tarsal claws.

Head with occiput and a vertical median band on face of shining blackish brown, the latter narrowest above the clypeus; lateral portions of face light ochraceous-buff, this slightly invading the band at the ocellar spots. Pronotum shining blackish brown, except for a moderately broad and sharply defined band of warm buff, which runs around the lateral and cephalic margins and is slightly widest caudad and a large, meso-caudal, bluntly and irregularly crescent-shaped marking of ochraceous-buff, which has caudad at each side of the median line a minute triangular invasion of the dark coloration. Dorsal surface of abdomen saccardos umber, suffused with blackish chestnut brown distad, broadly margined with light ochraceous-buff. Tegmina translucent tawny, except in area of humeral trunk, where they are heavily suffused with blackish chestnut brown as far as opposite the apex of the anal field, and from this suffusion to costal margin, where they are warm buff, this broad pale margin narrowing evenly and disappearing before the tegminal apex. Wings transparent, faintly tinged with prout's brown except in areas of branched veins, where this is heavy, veins prout's brown, this somewhat heaviest in marginal portion of costal field. Limbs warm buff, the coxae each with a heavy blotch proximad of blackish brown, the spines russet, this tinging the distal portion of the tibiae and the tarsal joints. Ventral surface of abdomen blackish brown, broadly margined laterad with warm buff.

Length of body, 17; length of pronotum, 4.9; width of pronotum, 6.2. length of tegmen, 19.1; width of tegmen, 5.2; length of caudal tibia, 7 mm;

The type of this handsome insect is unique.

**Xestoblatta micra**[27] new species (Plate VIII, figures 12 and 13.)

This, the smallest known species of the genus, shows in coloration and markings nearest agreement with *X. carrikeri* Hebard, described from the Santa Marta region of Colombia.

The male secondary sexual characters show, however, a development in some respects analogous to that found in *X. festae* (Griffini), though far less specialized.

In linear arrangement the species should be placed after *carrikeri* and before *festae*.

*Type.*—♂; Las Mesitas, Cundinamarca, Colombia. Elevation, 3200 feet. May, 1918. (From A. Maria.) [Hebard Collection, Type no. 547.]

Size small, form broad for the genus. Interocular space wide (1.4 mm.), slightly wider than that between the ocellar spots, four-fifths as wide as that between antennal sockets. Ocellar areas weakly defined, but ocellar spots strikingly pale. Pronotum as characteristic for *Xestoblatta*

Tegmina and wings reaching beyond apex of abdomen a distance somewhat less than the length of the caudal tarsal joints, venation as characteristic of the genus. Latero-caudal angles of fourth, fifth and sixth abdominal tergites weakly acute-angulate produced in increasing ratio caudad. Sixth tergite with a small but very deep and sharply defined depression mesad, formed by two very deeply concave areas, this depression transverse, twice as broad as long. Seventh tergite almost completely concealed. Eighth tergite with latero-caudal angles weakly acute-angulate produced from points on its free margin cephalad of the cerci, the caudal margin transverse between these.

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[27] From μικρά = small.

Supra-anal plate short, its length one-half its total basal width, caudal margin broadly convex between the cercal bases. Paired plates beneath the supra-anal plate specialized; sinistral plate with a chitinous arm directed ventrad, its apex produced in two sharp aciculate points, directed dextrad; dextral plate very large, extending to base of production of sinistral plate, its dorsal and ventral margins parallel, its disto-ventral angle produced sinistrad in a sharp point, with distal margin there concave. Subgenital pltae with sinistral margin weakly convex to a small, simple, unarmed, sinistral style, thence weakly oblique to point of greatest production, dextrad, there the surface of the plate is curled upward and produced sinistrad (the dextral style), this production tapering to its rounded apex and supplied with hairs (as is the subgenital plate and the distal margins of the supra-anal plate), the dextral margin thence obliquely ascending, straight, to the base of the plate.

Limbs as characteristic of the genus.

*Allotype.*— ♀ ; same data as type. [Hebard Collection.]

Agrees with male except in the following features. Form very slightly broader, the interocular space very slightly broader. Tegmina and wings decidedly less elongate. Dorsal surface of abdomen unspecialized, with latero-caudal angles of fourth to seventh tergites weakly acute-angulate produced in increasing ratio caudad, eighth tergite almost completely concealed. Supra-anal plate moderately elongate, its length one-half its width between the cercal bases, caudal margin triangulato-convex with apex broadly rounded. Subgenital plate short, convex, with free margin very broadly convex to median portion, where the plate is narrowly curled upward, with margin very broadly convex.

Head ochraceous-buff; the vertex ochraceous-tawny, becoming deep chestnut brown to immediately below the light ochraceous-buff ocelli; a fleck of deep chestnut brown ventro-mesad of the base of each antennal socket, connected by a narrow transverse suffused band of cinnamon brown, which shows a ventrad arcuation. Pronotum buckthorn brown, disk heavily washed with russet, this strongest as a large vague patch on each side, the intervening area caudad paler in the female, ochraceous-tawny. Tegmina translucent dresden brown, the marginal field slightly paler. Dorsal surface of male abdomen mummy brown, with a very narrow, paler lateral margin, the sixth tergite and supra-anal plate ochraceous-buff with a suffusion of prout's brown. Dorsal surface of female abdomen buckthorn brown, with a very narrow buffy lateral margin, the tergites toward their caudal margins and supra-anal plate at cercal bases suffused with mummy brown. Cerci mummy brown dorso-proximad and to near apex ventrad, shading in remaining portions to prout's brown. Limbs warm buff, the coxae each with a conspicuous but small blotch of mummy brown proximad and distad; the spines russet; the ventral margins of the femora lined with mummy brown, the tibiae with blotches of mummy brown at bases of spines and suffused distad with this color, the tarsi washed with tawny. Ventral surface of male abdomen mummy brown paling to dresden brown laterad and ochraceous-buff latero-sinistrad, the subgenital plate being suffused with mummy brown proximad and dextrad to near margin at point of greatest production, the remaining portions ochraceous-buff. Ventral surface of female abdomen blackish mummy brown paling to ochraceous-buff laterad, with a blotch of mummy brown on each segment, the subgenital plate shining blackish mummy brown, except in brief lateral portions, where it is ochraceous-buff.

Length of body, ♂ 17.5, ♀ 14.2; length of pronotum, ♂ 4, ♀ 3.9; width of pronotum, ♂ 5.1, ♀ 5; length of tegmen, ♂ 17.2, ♀ 15.2; width of tegmen, ♂ 5, ♀ 4.9; length of caudal femur, ♂ 6.7, ♀ 6.7 mm.

The species is known from the described pair.

**Xestoblatta festae** (Griffini) (Plate VIII, figures 14, 15 and 16.)

1896. *E*[*pilampra*] *festae* Griffini, Boll. Mus. Zool. Anat. comp. Univ. Torino, XI, no. 236, p. 2. [[♀]; Punta de Sabana, Darien.]

Murindo, Intendencia del Chocó, II, 16, 1918, (M. A. Carriker, Jr.), 1 ♂.

The male here recorded agrees fully with a male recently taken in the Canal Zone, Panama, by the author. Females from the Canal Zone accord throughout with the original description of *festae* and undoubtedly represent the opposite sex of the males mentioned above. It is further evident that, though the females recorded by us and described as this species in 1916,[28] were correctly assigned, the male there described as *festae* represents a distinct species, which we here name *Xestoblatta hoplites*.[29]

As the male sex of the present species was previously unknown, we give the following description of this remarkable insect, which shows the highest specialization of the fourth, fifth, sixth and seventh abdominal tergites we have found in the Blattidae.

Size medium, form moderately broad, rather slender for the genus. Interocular space (.9 mm.) slightly over half as wide as space between antennal sockets. Ocellar areas very weakly defined. Pronotum as characteristic of genus, but not proportionately fully as broad as in *festae*.

Tegmina and wings fully developed, with venation as characteristic of *Xestoblatta*, with intercalated triangle broad, as in *carrikeri*. Wings with

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[28] Trans. Am. Ent. Soc., XLII, p. 377.

[29] *Type*: ♂; Rio Machuca, Costa Rica, 150 meters, January, 1907, (P. Biolley), [Academy of Natural Sciences of Philadelphia, Type no. 5373].

(three) complete and (three) incomplete branches of the ulnar vein. Median segment unspecialized. Abdominal tergites with latero-caudal angles not produced; fourth with median third produced caudad in a rounded trapezoidal plate, which extends as far as the caudal margin of the sixth tergite, thereby covering a large circular cavity, which occurs mesad in the sixth tergite; fifth tergite with caudal margin transverse to margins of produced fourth tergite, thence deeply concave-emarginate in median half, this emargination affording space for the cavity in the sixth tergite. Seventh tergite rather broadly visible, eighth apparently absent.

Supra-anal plate produced, rounded trapezoidal between cercal bases, this portion with length three-quarters its proximal width. Subgenital plate with distal portion of dorsal surface remarkably specialized as follows: dextral surface of plate produced distad on its internal surface in a heavy, cylindrical process, which is slightly longer than wide; from the flat apex of this process springs the dextral style, a stout process nearly four times as long as its proximal width, tapering to a heavy spine which forms its apex, and bearing dorsad near the base of this spine another similar but smaller spine, directed dorso-distad; the direction of base and style is weakly meso-dorsad, nearly on a line with the dextral margin of the plate. Subgenital plate with sinistral surface produced dorsad on its internal surface in a large heavy, rounded process, from the apex of which springs an exceedingly elongate and tapering agglutinated mass of spiniform hairs, which mass is sharply recurved at its base and directed ventro-sinistrad; the dextral portion of the production forms a broad plate from apex to base, of such a form that the entire caudal surface of the production is concave, the free margin of this plate supplied with a heavy fringe of very elongate spiniform hairs, these directed distad, with distal portions of all but the more dorsal curving sinistrad (see plate VIII, figure 16). Subgenital plate with brief sinistral margin deeply concave-emarginate to two minute projections, which are situated sinistrad, the dextral margin strongly oblique proximad, then forming an angulation, straight and very weakly oblique to the apex formed with the sinistral margin; projections at this apex, two minute, cylindrical processes, with apices rounded, the dextral of which is twice as long as the sinistral.

Limbs as characteristic of the genus.

Head ochraceous-buff, with vertex dark chestnut brown to above ocellar areas and two small points of the same, joining in a transverse marking below and between the antennal sockets. Pronotum chestnut brown, this shading gradually into the narrow ochraceous-buff margin cephalad, which becomes wider on the lateral margins and invades the darker area briefly latero-caudad. Tegmina translucent tawny, except the marginal field which is ochraceous-buff. Wings transparent, tinged with prout's brown, this heavy in areas of branched veins, veins prout's brown, this somewhat darkest in marginal portion of costal field. Dorsal surface of abdomen prout's brown, with lateral margins narrowly buff and distal half of production of fourth tergite buffy. Limbs ochraceous-buff, the coxae each with a proximal and distal suffused fleck of mars brown, the spines russet, the tibiae tinged with cinnamon brown, heavily only at extremities; the tarsal joints paler, ochraceous-tawny. Ventral surface of abdomen buffy, deepening to mars brown distad.

Length of body, 18.5; length of pronotum, 4.3; width of pronotum, 5.7; length of tegmen, 18.9; width of tegmen, 5.2; length of caudal tibia, 7.3 mm.

**Xestoblatta hamata** (Giglio-Tos)

1898. *I*[*schnoptera*] *hamata* Giglio-Tos, Boll. Mus. Zool. Anat. comp. Univ. Torino, XIII, no. 311, p. 4. [♂, ♀; Santiago and Gualaquiza, Ecuador.]

Andagoya, Antioquia, IV, 22, 1918, (M. A. Carriker, Jr.), 2 ♀.

These individuals apparently differ from the originally described females in features which may be due either to slight inaccuracies in the original description, or to individual variations. Material of both sexes would quickly solve the problem.

In the present material the head is not completely testaceous, being, as in *X. festae* (Griffini), ochraceous-buff, with vertex to above the ocelli dark russet, with a narrow transverse suffusion of this same color between the antennal sockets, showing a weak convexity ventrad.

The measurements for the females here recorded are: length of body, 25 to 23; length of pronotum, 5.8 to 6; width of pronotum, 7.4 to 7.6; length of tegmen, 24.7 to 25.1; width of tegmen, 7 mm.

**Euphyllodromia elegans** (Shelford)

1907. *Pseudophyllodromia elegans* Shelford, Ann. Mag. Nat. Hist., (7), XIX, p. 34. [♀; Maroni [River], French Guiana.]

Cauca, 1 ♂, [A. N. S. P.].

The species is apparently widely distributed in South America, as a male, which agrees fully with the specimen here recorded, is in the Academy Collection, collected by C. F. Baker at Pará, Brazil.

**Euphyllodromia stigmatosoma** new species (Plate IX, figure 19.)

The present species agrees closely with *E. hystrix* (Saussure) in pronotal markings, but differs widely in the striking and distinctive marking of the dorsal surface of the mesonotum, metanotum and abdomen.

*Type.*—♂; Andagoya, Antioquia, Colombia. April 22, 1918. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 549.]

Size small for the genus, form and structure normal. Head with interocular space (.7 mm.) three-fifths width of space between antennal sockets. Ocellar spots small and weakly indicated. Maxillary palpi and pronotum normal.[30]

Tegmina and wings less ample than in *hystrix*,[31] length distinctly less than body length, not as in that species with length distinctly greater than body length. Dorsal surface of abdomen developed as is apparently normal for the genus.[32]

Supra-anal plate strongly transverse, showing a broad and weak triangular production between cercal bases, with rounded apex obtuse-angulate. Concealed genitalia complex. Subgenital plate symmetrical, surface with a flexure dorsad toward the free margin, sinistral margin, from brief proximal portion, declivent and weakly concave to median portion, dextral margin showing a sudden, small but strong concavity below the cercus, thence straight, declivent to median portion; median portion with two deeply inset plates, which are attingent distad, these slightly shorter than the proximal width, with free margin rounded, the curvature strongest dorso-distad, fitting snugly between these styles is a short, narrowly triangular plate, with dextro-caudal margin armed with minute sharp teeth.

Limbs as characteristic of the genus.[33]

Head ochraceous-buff, shading to ochraceous-orange on occiput. Antennae with first joint ochraceous-buff, other joints mummy brown, except the more proximal ventrad, where they are ochraceous-buff. Maxillary palpi ochraceous-buff, fifth joint suffused with mummy brown, this color showing distad in a line along the ventro-cephalic margin of the third joint. Pronotum shining, lateral margins transparent, showing a faint buffy tinge. Disk of pronotum blackish brown, except for the following markings: cephalic margin narrowly warm buff, this continued caudad by two broader, straight lines, just within the discal margin, which diverge caudad and widen in caudal portion, but are there transparent, a narrow medio-longitudinal line of warm buff also extends caudad, widening mesad and interupted caudad of that area, the mesal widening showing an ochraceous-tawny medio-longitudinal linear suffusion. Mesonotum blackish brown, with a medio-longitudinal line and a fleck on each side of white. Metanotum prout's brown, suffused with mummy brown meso-laterad and with a suffused white spot on each side caudad. Median segment and first to fifth abdominal tergites blackish brown, each with a transverse, roughly oval, white area on each side caudad, these showing a faint bluish tinge, the largest pair on the second tergite. Remaining dorsal surface of abdomen blackish brown, except median specialized area of sixth tergite, which is russet.

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[30] As described, Mem. Am. Ent. Soc., no. 4, p. 84, (1920).

[31] Comparison is made with a Costa Rican female in the Academy Collection.

[32] Described, Mem. Am. Ent. Soc., no. 4, p. 84, (1920).

[33] Described, Mem. Am. Ent. Soc. no. 4, p. 82, (1920).

Tegmina transparent, nearly colorless, except for the following markings: veins prout's brown, this extending as a broad suffused area along the distal half of the discoidal vein toward the costal margin, distad spreading around the distal portion of the discoidal field as a weaker suffusion, the free margin of the anal field rather broadly prout's brown, particularly distad where it is continued slightly beyond the apex of this field, the anal sulcus also narrowly margined with prout's brown, the proximal portion of the area occupied by the discoidal sectors weakly tinged with ochraceous-tawny. Wings clear hyaline, iridescent, veins prout's brown, area of enlarged portion of costal veins in proximal half prout's brown, in marginal half light buff, the former continued around the apex of the anterior field as a broad suffusion. Cerci with dorsal surface light buff, suffused proximad and along the internal margins with blackish brown, ventral surface ochraceous-tawny, becoming prout's brown along internal margin. Ventral surface ochraceous-buff, the abdomen marked proximad and laterad with mummy brown. Limbs ochraceous-buff, the femora narrowly margined dorsad with prout's brown, the tibiae with heavy flecks of this color at bases of dorsal spines.

Length of body,[34] 10.8–10.3; length of pronotum, 2.6–2.7; width of pronotum, 3.7–3.8; length of tegmen, 9.8–9.7; width of tegmen, 2.6–2.7 mm.

In addition to the type, a paratypic male, bearing the same data, is before us.

**Euphyllodromia angustata** (Latreille)

1811. *Blatta angustata* Latreille, in Humboldt and Bonpland, Recueil. Observ. Zool. et Anat. comp., I, p. 146, pl. XV, fig. 9. [Vera Cruz, Vera Cruz, [Mexico].]

Andagoya, Antioquia, IV, 22, 1918, (M. A. Carriker, Jr.), 1 ♂, 4 ♀, 1 juv. ♀.

The species is the most abundant of the genus from tropical Mexico, southward to Panama. The present material shows that its distribution extends well down through the Colombian Chocó, probably the only region in South America in which it occurs. The present record is the first for the species from that continent.

### NYCTIBORINAE

### **MUZOA** new genus

This genus would superficially appear to be very near *Nyctibora*, but numerous features of limb armament and structure, as well as of the cerci and male subgenital plate show wide diversity.

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[34] The measurements of the type are given first.

The symmetrical tarsal claws are found elsewhere only in *Megaloblatta* in the recognized genera of the Nyctiborinae. So distinctive is the present genus, that its proper position is a problem.

After considering the evidence, we feel it best to place *Muzoa* immediately after *Nyctibora*. The Nyctiborinae, unlike the Pseudomopinae, is a small subfamily including comparatively few genera, these representing a number of very distinct units, of one of which *Muzoa* is the single known member.

Genus monotypic. Genotype.—*Muzoa simplex* new species.

Known in the adult condition only from the male sex. Head, pronotum, tegmina and wings of similar structure to *Nyctibora*. Interocular space wide, wider than in any known species of that genus. Ocellar spots small but distinct. Supra-anal plate symmetrical, briefly emarginate mesad. Cerci broad and heavy, subspatulate, but with apices rather sharp. Subgenital plate symmetrical, the styles of equal length. Cephalic femora with ventro-cephalic margins armed with minute and well spaced spiniform hairs (no heavier than the spiniform hairs on the adjacent surfaces), which change to minute spines distad, terminating in three heavy spines which increase greatly in length distad, the distal being very elongate. Other ventral femoral margins supplied with heavy spines, of which those on the caudal margins of the median and caudal limbs are very elongate. Four proximal tarsal joints each furnished with a pulvillus. Small arolia present between the bases of the elongate, symmetrical tarsal claws.

**Muzoa simplex** new species (Plate IX, figures 20 and 21.)

The present insect looks much like a depauperate specimen of *Nyctibora obscura* Saussure, having more decidedly reduced organs of flight. Closer examination shows it to differ not only in specific features, but also in characters which oblige its assignment to a distinct genus.

*Type.*—♂; Muzo, Boyacá, Colombia. Elevation, 2700 feet. September, 1919. (From A. Maria.) [Hebard Collection, Type no. 668.]

In addition to the characters given in the generic description, we consider the following specifically diagnostic. Size near that of the comparatively small *Nyctibora azteca* Saussure and Zehntner,[35] form appreciably broader, structure similar, heavy. Head with interocular space three-quarters as wide as that between the ocelli. Pronotum of the characteristic *Nyctibora* type, proportionately broader with caudal angulation weaker than in *azteca*. Tegmina and wings showing marked reduction, but extending slightly beyond the apices of the short cerci. Venation as characteristic of *Nyctibora*, the wing veins, however, heavily suffused.

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[35] Compared with a Mexican female in the Hebard Collection.

Supra-anal plate transverse, the lateral margins straight and convergent to the two broadly rounded distal extremities, which are symmetrical and, joining mesad, form a rather weak, rounded median emargination. Cercus very broad fusiform, subspatulate, dorsal surface deplanate, lateral margins broadly convex, converging distad to the rather sharp apex. Paired plates beneath supra-anal plate with ventral portion of sinistral developed into a heavy, elongate, cylindrical shaft, directed mesad along the ventral margin of this plate and distad curving cephalad to its acute apex. Subgenital plate small, short lateral margins hairy, straight and convergent to distinct emargination on each side, in which the styles are set, between these symmetrical, weakly angulato-convex. Styles heavy, symmetrical, slightly over three times as long as broad, cylindrical, but showing dorsal and ventral flattening in proximal half, with apex rather sharply rounded.

Tarsal joints heavy, but slightly more elongate than is usual in *Nyctibora*, the caudal metatarsus as long as the combined length of the succeeding joints.

General coloration shining dark chestnut brown, pile buffy. Wings with veins suffused with mummy brown, this causing the anterior field to be in large portion subopaque, spreading over all but the proximal portion and the area narrowly adjacent to the median vein to its distal portion, which portions and the radiate field are transparent.

Length of body, 21.5; interocular width, 1.2; length of pronotum, 6.8; width of pronotum, 10; length of tegmen, 20.4; width of tegmen, 8.7; length of cercus, 3.4; width of cercus, 1.5; length of caudal femur, 8.7; length of caudal metatarsus, 3.2 mm.

In addition to the type, three immature females, one large, two half grown, from Villavicencio, Intendencia del Meta, Colombia, taken in July, 1917 and December, 1918, for A. Maria, are before us.

These show remarkable features of coloration, for, though generally shining blackish brown, three to five terminal joints of the antennae and the distal half of the cerci are strikingly buffy. No such striking color characters are known to us for immatures of the species of the genus *Nyctibora*.

**Paratropes phalerata** (Erichson)

1848. *B*[*latta*] (*Nyctibora*) *phalerata* Erichson, in Schomburgk, Reise in Brit. Guiana, III, p. 580. [British Guiana.]

1920. *Paratropes pinoganae* Hebard, Mem. Am. Ent. Soc., no. 4, p. 89, pl. V, fig. 5. [♀; Pinogana and Corozal, Panama.]

Muzo, Boyacá, VII, 1919, (from A. Maria), 1 ♂, 1 ♀.

Villavicencio, Intendencia del Meta, II, 1920 and VI, 1918, (from A. Maria, 2 ♀.)

The present specimens show that *pinoganae* represents a mere variation of *phalerata*, unworthy of nominal recognition. The features upon which that supposed species was based are found to be subject to decided variation. Thus the Villavicencio individuals and one from Muzo are intermediate in tegminal form between Panamanian (*pinoganae*) and Guianan examples before us; those from Villavicencio agree with the former in pronotal, tegminal and wing markings, but with the latter in having black cerci. The pair from Muzo agree with the Guianan specimens in pronotal marking; the male agrees with them in tegminal form and in having a very broad wing band, but with the Panamanian examples in tegminal marking and pale cerci; the female agrees with the Guianan specimens in having dark cerci, but with the Panamanian specimens in tegminal markings and narrow wing band.

Though the series available is deplorably small, it appears to be certain that we have an extremely variable unit to deal with, the differences noted being ascribable wholly to individual variation.

**Paratropes metae** new species (Plate IX, figure 22.)

Though showing in depth of coloration nearest agreement with *P. elegans* (Burmeister),[36] the present species is more nearly related to *P. aequatorialis* Saussure. This is shown by its form and the presence of a distinct tegminal sulcus.

*Type.*— ♀; Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. September, 1918. (From A. Maria.) [Hebard Collection, Type no. 666.]

Size medium, form normal for the genus, not as broad as in *elegans*. Head with interocular space very wide for the genus (.85 mm.), fully three-fifths that between the minute but distinct ocellar spots. Antennae missing.

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[36] Material of this species from British Guiana and Brazil is before us.

Pronotum as characteristic of the genus; cephalic margin slightly more broadly convex than caudal margin to the sharply rounded lateral angles, caudal margin showing a trace of humeral angulation. Tegmina and wings extending much beyond apex of abdomen, tegmina more elongate than in *elegans*, with anal sulcus decided. Genitalia and limbs as characteristic of the genus.

Head and underparts shining black, except abdominal margins which on proximal segments are bordered with buffy, this confined to the proximal portions of the lateral margins of the more distal segments, the subgenital plate broadly margined in distal portion with this color. Pronotum black, with a broad cephalic marginal band of very rich ochraceous-buff, this slightly broader laterad, with its caudal margins there very broadly convex, mesad with median invasion of black area shallow, its lateral margins oblique to the transverse median portion. Tegmina translucent in pale portions, russet, with a broad black humeral band, a narrower oblique black band springing from proximo-marginal portion of anal field, sutural margin rather broadly margined with black, this widening at apex and reaching juncture of the two larger bands; costal margin with black to near distal extremity, this moderately widened mesad. Wings transparent, ochraceous-tawny with an orange tinge, anterior field broadly margined distad with blackish brown, radiate field broadly bordered with a weak suffusion of blackish brown, which is of nearly equal width throughout. Dorsal surface of abdomen shining black, margined broadly laterad with buffy. Cerci black.

Length of body, 17.5; length of pronotum, 5.3; width of pronotum, 9.3; length of tegmen, 21.5; width of tegmen, 9 mm.

The type of this species is unique.

**Megaloblatta blaberoides** (Walker)

1868. *Epilampra blaberoides* Walker, Cat. Dermapt. Saltat. Br. Mus., v, Suppl. Blatt., p. 12. [♂, ♀; Chontales, Nicaragua.]

Muzo, Boyacá, V, 1919, (from A. Maria), 1 ♂.

Length of body, 63; interocular width, 1.8; length of pronotum, 14.7; width of pronotum, 21.8; length of tegmen, 78; width of tegmen, 30.2; length of caudal femur, 23.3 mm.

## EPILAMPRINAE

**Leurolestes pallidus** (Brunner)

1865. *Nauphoeta pallida* Brunner, Nouv. Syst. Blatt., p. 286. [Cuba.]

Fusagasugá, Cundinamarca, V, 1919, (from A. Maria), 1 ♂.

Las Mesitas, Cundinamarca, V, 1918, (from A. Maria), 1 ♂.

Villavicencio, Intendencia del Meta, V, 1919 and XII, 1917, 1918, (from A. Maria), 4 ♂, 7 ♀, 6 juv.

This tropical domiciliary species has, for South America, previously been recorded only from Brazil.

**Epilampra substrigata** Walker

1868. *Epilampra substrigata* Walker, Cat. Blatt. Br. Mus., p. 73. [Unknown locality.]

Susumuco, Cundinamarca, V, 1919, (from A. Maria), 3 ♀.

Villavicencio, Intendencia del Meta, XII, 1918, (from A. Maria), 2 ♂, 6 ♀, 2 juv. ♀.

The present series agrees fully with Walker's description, except that in no individual is the tegminal reduction equalled. The majority have the organs of flight extending slightly beyond the apex of the supra-anal plate, in but two females do these members fail to reach that point by a very brief distance.

The head has a very broad blackish interocular band, invaded by rays from the buffy vertex, these rays varying with intensification and recession of the color pattern, sometimes subobsolete, sometimes very narrowly severing the band. The vertex and face are finely but not thickly dotted with blackish brown, these dots fusing in intensive specimens to form a very narrow subocellar transverse band and a delicate picturing below. The pronotum is minutely and very heavily dotted with blackish brown, so finely and evenly that it appears almost solidly colored to the naked eye. The temgina are minutely and thickly dotted with dark brown, a moderate number of larger flecks, lighter than the dots, occurring in the distal portion. The wing coloration is striking, the anterior field being strongly tinged with ochraceous-tawny, transparent except in area of the costal veins, where it is opaque and mars brown in coloration; radiate field is transparent, faintly tinged with sepia, except distad near the intercalated triangle where a faint ochraceous-tawny tinge is noted, showing a weak tessellation, the veins of this field are sepia. The ground coloration of the insect, including the limbs, is clay color, the limbs with fine longitudinal streaks and frequent dots of mummy brown. The abdomen is heavily suffused with blackish brown dorsad, except for a very narrow buffy margin; ventrad it is clay color, heavily and thickly dotted with mummy brown.

The extremes of the series are as follows; length of body, ♂ 21–20, ♀ 25.2–27.8; length of pronotum, ♂ 5.4–5.5, ♀ 6.2–6.7; width of pronotum, ♂ 6.4–6.7, ♀ 7.6–8; length of tegmen, 21.1–20.7, ♀ 21.2–23.8; width of tegmen, ♂ 6.5, ♀ 6.9–7.1 mm.

We feel it advisable to diagnose this material fully, due to the fact that, since the somewhat unsatisfactory original description, the species has not been reported.

Compared with a recorded Brazilian series of *E. grisea* (DeGeer), in the Philadelphia Collections, *substrigata* is seen to be rather closely related, though separable by numerous important features.

**Epilampra stigmosa** Giglio-Tos

1898. *E*[*pilampra*] *stigmosa* Giglio-Tos, Boll. Mus. Zool. Anat. comp. Univ. Torino, XIII, no. 311, p. 8. [♂; Valley of Santiago, Ecuador.]

Villavicencio, Intendencia del Meta, XII, 1918, (from A. Maria), 2 ♀.

The conspicuous whitish patch, occupying all of the distal portion of the area of the costal veins of the wngs, is a striking feature in this species, which otherwise shows a rather decided similarity to *E. colombiana* Saussure. We feel satisfied, however, from study of the description and comparison with Panamanian specimens of *colombiana*, in the Philadelphia Collections, that *stigmosa* represents a valid specific unit.

**Homalopteryx laminata** Brunner[37]

1892. *Homalopteryx laminata* Brunner, Proc. Zool. Soc. London, 1892, p. 204, pl. XV, fig. 1. [♀; Chateaubelais and in forest at 2000 feet, St. Vincent, West Indies.]

New York quarantine, VI, 30, 1914, (H. B. Shaw; in orchids shipped from Puerto Colombia, Atlantico, Colombia), 1 juv. ♂.

We are able to make the above assignment with certainty, owing to the presence in the Philadelphia Collections of a large series of this interesting species, from the Island of Trinidad and Venezuela. It is closely related to the genotype *H. capucina* Brunner, from Venezuela and Colombia.

The dissimilarity between the sexes of *laminata* is very decided, the male having fully developed organs of flight, the female retaining the lamellate form of the early stages and entirely lacking alar organs.

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[37] Incorrectly referred to *Rhicnoda* by Kirby, Syst. Cat. Orth., I, p. 124, (1904).

**Hyporhicnoda metae** new species (Plate X, figures 29 and 30.)

Compared with Panamanian females of the genotype, *H. reflexa* (Saussure and Zehntner), in the Philadelphia Collections, the female sex of the present species is seen to differ in its broader form, in lacking a medio-longitudinal carina on the pronotum, mesonotum and metanotum, in lacking rugae on the caudal margins of the dorsal segments, and in the heavier, though evidently much atrophied, limb armament.

From the genus *Rhicnoda* it differs in this sex in the distinctly reflexed pronotum, broader form, lack of rugae, absence of even rudimentary tegmina and reduced limb armament.

The male, we believe, will be found to have fully developed organs of flight and a very different form, but, as in *reflexa*, showing many features which readily enable the proper sex association.

*Type.*—♀; Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. December, 1918. (From A. Maria.) [Hebard Collection, Type no. 667.]

Size medium, form broad elliptical. Head hidden under pronotum. Head with surface of occiput polished and not impresso-punctate; eyes widely separated by a distance very slightly greater than that between the weakly defined ocellar spots; exposed surface of head very weakly and irregularly impresso-punctate and hairy, this heaviest in the flattened inter-ocular-ocellar area. Antennae short. Pronotum extending well beyond head, distinctly cucullate, the convexity beneath which the head fits distinct, without the lateral rugae found in *reflexa,* cephalic margin not thickened, evenly convex and moderately reflexed to the latero-caudal angles, which are weakly produced caudad; caudal margin very weakly concave on each side and very weakly convex mesad. Entire dorsal surface apparently smooth, but under high magnification seen to be thickly supplied with minute but well projecting, irregularly rounded rugae, these weakening and becoming less numerous caudad.[38] Tegmina and wings absent.

Supra-anal plate heavily chitinous, over twice as broad as long, the free margin convex, showing slight flattening laterad and a trace of median emargination. Cerci very short and lamellate, scarcely projecting beyond the body outline. Subgenital plate very large, simple.

Limbs showing some degree of atrophy of all spines, surfaces slightly roughened. Ventro-cephalic margin of cephalic femora armed with three (two to six in paratypes) heavy, irregular and irregularly placed spines, succeeded by an irregular row of rather elongate chaetiform spines, terminated by a small but heavy, though plainly decidedly atrophied, distal spine

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[38] The structure of the cephalic and dorsal surface is such that all of the individuals before us are heavily coated with foreign particles.

(none to two in paratypes); other ventral femoral margins supplied only with a few chaetiform hairs, except cephalic margins of median and caudal femora, which are armed with one to three and one distal, heavy, though greatly atrophied, spines. Caudal metatarsus elongate, one and one-quarter times as long as combined length of succeeding tarsal joints, with two rows of spines ventrad and a row of more distantly placed spines on each side. Four proximal tarsal joints supplied with pulvilli, these occupying nearly the entire ventral surface of all except the metatarsus, the pulvillus of which is distal and scarcely longer than broad. Tarsal claws simple, symmetrical, with very heavy bases. Arolia absent.

General coloration bister, the dorsal surface often wood brown, due to the coating of foreign particles. Face, limbs and proximal portion of ventral surface of abdomen mesad slightly paler, walnut brown.

*Measurements (in millimeters)*

| | Length of body | Greatest width of body | Length of pronotum | Width of pronotum | Length of caudal femur |
|---|---|---|---|---|---|
| *Type* ................ | 26 | 17 | 8.2 | 14.1 | 8 |
| *Paratypes* (13)........ | 23.8–26.7 | 16–17.2 | 7.8–8.5 | 13.3–14.3 | 7.7–8.1 |
| *Paratype*[39] ........... | 20 | 13 | 6.7 | 11.2 | 6.4 |

In addition to the type, fourteen paratypic females are before us, bearing the same data but taken from May, 1917 to August, 1919. Of these a single smaller individual may not have reached maturity.

**Hyporhicnoda litomorpha** new species (Plate X, figures 31 and 32.)

The contour of this species is much more simple than that of *H. metae*, here described, the pronotum showing only a very feeble sub-cucullate condition above the head and having its cephalic margin not at all reflexed cephalad and weakly so laterad, while the microscopic rugae of the dorsal surface of the female are even finer and more regular.

In strength of limb armament and lack of a decided medio-longitudinal carina, it agrees closely with *metae*, differing from the Central American genotype *reflexa* (Saussure and Zehntner) in these respects, as well as in the sculpture of the dorsal surface of the female.

Compared with a Costa Rican male of *reflexa*, in the Hebard Collection, the species is found to differ additionally in this sex in having the head hardly even flattened in the inter-ocular-ocellar area, and there with impressed punctae much smaller and less numerous. The latero-caudal angles of the pronotum are rather broadly rounded, not acute. The tegmina are glossy as if lacquered, but very similar in form and venation, except that the apex is not as evenly rounded and situated further toward the costal margin, the veins showing no minute swellings. The wings are similar, the veins heavier and more shining, with median vein unbranched.

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[39] We are unable to determine whether this specimen represents a depauperate adult or an immature example.

*Type.*—♀; Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. 1919. (From A. Maria.) [Hebard Collection, Type no. 669.]

Size medium, larger than *metae,* form oval, the greatest width being across the abdomen mesad. Head hidden under pronotum. Head very broad, the reduced eyes widely separated by a distance (2.1 mm.) slightly greater than that between the weakly defined ocellar spots; exposed surface of head rather coarsely and thickly (but weakly and scantily as compared with the genotype) impresso-punctate; cheeks moderately supplied with hairs; face flattened, very feebly convex, with two transverse impressions just below and between the ocelli and on each side above the labial suture.

Pronotum extending well beyond head, showing a very feeble sub-cucullate condition, rather strongly convex to the scarcely reflexed narrow lateral portions of the cephalic margin, this margin subcingulate, evenly convex to the latero-caudal angles, which are weakly produced caudad, forming an angle of about ninety degrees; caudal margin as in *metae.* Entire dorsal surface apparently smooth and somewhat polished, but under high magnification seen to be very thickly supplied with very minute, flattened, irregularly rounded rugae, these changing proximad on abdomen to minute, flattened, scattered points, which decrease greatly in number caudad. Tegmina and wings absent. Supra-anal and subgenital plates as in *metae.* Cerci very short and lamellate, not projecting beyond the body outline.

Limbs showing some degree of atrophy of all spines, surfaces almost smooth. Ventro-cephalic margin of cephalic femora armed with five (five and seven in allotype) heavy, irregular and irregularly placed spines, succeeded by an irregular row of rather elongate chaetiform spines, terminated by a small but heavy, though plainly decidedly atrophied, distal spine (one and two in allotype, not showing as great atrophy); other ventral femoral margins with a few chaetiform hairs, except caudal margin of cephalic femora which is armed with one distal and one sub-distal spine (the same in allotype) and cephalic margins of median and caudal femora, which are armed with one to four and one distal (two to three and one distal in allotype) spines. Tarsi heavy, caudal metatarsus as long as combined length of succeeding tarsal joints. Tarsal armament, claws and pulvilli as in *metae,* except that the latter are slightly larger, that of the caudal metatarsus being one and a half times as long as wide.

*Allotype.*—♂; same data as type, except taken December, 1918. [Hebard Collection.]

Very dissimilar to female. Size smaller, form much more slender, structure much more delicate. Head much more slender than in female, eyes well developed, separated by a space slightly less than that between the well defined ocellar areas, inter-ocular-ocellar space with a few scattered impressed punctae, cheeks smooth. Antennae short.

Pronotum very much smaller than in female, extending beyond head, showing a feeble cucullate condition, weakly concave to broad and weak concavities before the scarcely reflexed lateral portions of the cephalic margin, this margin cingulate, evenly convex to the latero-caudal angles which are broadly rounded at, however, less than ninety degrees, caudal margin broadly convex, showing very slight production mesad and at the shoulders. surface of pronotum very finely and thickly impresso-punctulate, a very fine medio-longitudinal line indicated in the sub-cucullate area, the disk with weak impressions, which recall those found in some species of the Blaberinae. Tegmina and wings fully developed, extending well beyond apex of abdomen. Tegmina delicate, glossy sub-chitinous, as wide mesad as distad, apex toward costal margin rather broadly rounded; marginal and anal fields proximad impresso-punctulate, remaining portions smooth. Wings with anterior field extending much beyond radiate field, median vein undivided; radiate field not folding in proximal portion when wings are closed, remaining portions folding; venation as characteristic of genus.[40] Abdominal tergites with latero-caudal angles acute, the sixth with those angles moderately produced caudad, the seventh and eighth tergites much narrower with only distal portions visible.

Supra-anal plate chitinous except narrowly mesad, where it is transversely weakly chitinous; free margin broadly convex to median point, where a small angulate emargination occurs, this continued as a medio-longitudinal sulcus to the sub-chitinous area; proximad the plate is impresso-punctate on each side in a small area. Cerci small, tapering to the bluntly rounded apex, extending as far caudad as apex of supra-anal plate, cylindrical with a broad external lamella, joints weakly defined. Subgenital plate asymmetrical, minute simple styles present, proximo-laterad in position, the dextral in a narrowly V-shaped subchitinous area, deflexed; dextral margin straight, rounding into the transverse distal portion, which rounds into the moderately oblique, feebly convex sinistral portion, which is feebly emarginate at the sinistral style; surface weakly convex but showing a convex ridge, running proximad from the dextral V-shaped sub-chitinous area.

Limbs much more slender than in female, their armament given with description of that sex.

Female above blackish brown, the pronotum with a paired suffusion along the cephalic margin each side of the median point of mikado brown, which extends over a third the distance to the latero-caudal angles. Face, margins

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[40] Described, Mem. Am. Ent. Soc., no. 4, p. 98, (1920).

of underside of thoracic segments and all of abdomen chocolate. Coxae buffy, femora and tarsi buffy suffused with cameo brown, tibiae cameo brown.

Male above shining blackish brown, the pronotum paling to ochraceous-tawny narrowly along the buckthorn brown cingulate cephalic margin, the ochraceous-buff suffusion extending on each side over half the distance to the latero-caudal angles. Tegmina shining blackish brown, transparent proximad, translucent distad. Wings transparent, veins shining blackish brown, the anterior field heavily tinged with this color, particularly heavy in area of costal veins, weak between median and discoidal veins, radiate field weakly tinged with blackish brown. Dorsal surface of abdomen shining blackish chestnut brown. Head with vertex and inter-ocular-ocellar area shining blackish brown, ocelli cream color, proximal antennal joints, remaining portions of head, thoracic segments and limbs ochraceous-buff, the face tinged with tawny, remaining antennal joint's prouts brown. Ventral surface of abdomen shining ochraceous-buff tinged with cinnamon brown.

Length of body, ♂ 25, ♀ 28; greatest width of body, ♀ 18; length of pronotum, ♂ 6.7, ♀ 9.7; width of pronotum, ♂ 9.4, ♀ 14.2; length of tegmen, ♂ 22; width of tegmen, ♂ 8; length of caudal femur, ♂ 7.3, ♀ 8.1; length of caudal metatarsus, ♂ 2.9, ♀ 2.9 mm.

This species, which of those assigned to *Hyporhicnoda* has the strongest Polyphagine facies, is known only from the described pair.

The addition of two new species to the genus *Hyporhicnoda* makes it necessary to change the generic diagnosis, in that the species are now known to show presence or absence of a medio-longitudinal carina.

### BLATTINAE

**Lamproblatta albipalpus** Hebard

1919. *Lamproblatta albipalpus* Hebard, Trans. Am. Ent. Soc., XLV, p. 109, pl. XVII, figs. 7 to 9. [♂, ♀ : Cincinnati, Sierra Nevada de Santa Marta, Colombia; Venezuela; Gatun, Obispo Station, zone limit five miles west of Empire, Corozal, Old Panama, Taboga Island and Tabogilla Island, Panama.]

Villavicencio, Intendencia del Meta, Colombia, XII, 1918, (from A. Maria), 1 ♂.

This species has been recorded from South America only from the localities noted above.

**Periplaneta brunnea** Burmeister

1838. *P[eriplaneta] brunnea* Burmeister, Handb. Ent., II, abth. II, part I, p. 503. [♂, ♀ : Chile; Demerara [ = British Guiana].]

Pensilvania, Cordillera Central, Caldas, VI, 1918, (from A. Maria), 1 ♂, 1 ♀.

Espinal, Tolima, IV, 1918, (from A. Maria), 1 ♀.

Villavicencio, Intendencia del Meta, VI, 1918, (from A. Maria), 1 ♂, 2 ♀.

This is a widely spread domiciliary species in the American tropics.

**Periplaneta australasiae** (Fabricius)

1775. [*Blatta*] *australasiae* Fabricius, Syst. Ent., p. 271. ["In nave e mare pacifico et regionibus incognitis revertente."]

Andagoya, Antioquia, IV, 22, 1918, (M. A. Carriker, Jr.), 1 ♂.

Pensilvania, Cordillera Central, Caldas, VI, 1918, (from A. Maria), 1 ♂, 3 ♀.

Córdoba, Valle, V, 23, 1918, (M. A. Carriker, Jr.), 1 ♀.

Las Mesitas, Cundinamarca, V, 1918, (from A. Maria), 1 ♂, 1 ♀.

Susumuco, Cundinamarca, VIII, to XI, 10, 1917, (from A. Maria), 2 ♂, 7 ♀, 1 juv.

Villavicencio, Intendencia del Meta, V, 1917 and XII, 1918, (from A. Maria), 5 ♂.

The habits of this species are similar to those of *brunnea*, and, in the American tropics, the insect is apparently even more generally distributed and abundant.

### PANCHLORINAE

**Leucophaea maderae** (Fabricius)

1781. *B*[*latta*] *maderae* Fabricius, Spec. Ins., I, p. 341. [Madeira.]

Pensilvania, Cordillera Central, Caldas, VI, 1918, (from A. Maria), 1 ♂, 3 ♀.

Susumuco, Cundinamarca, VIII and XI, 10, 1917, (from A. Maria), 2 ♂.

Villavicencio, Intendencia del Meta, XII, 1918, (from A. Maria), 6 ♂, 11 ♀, 4 juv.

This species, like the two preceding, is a tropical domiciliary insect. It is very extensively distributed through the West Indies and has been recorded from widely separated points in South America.

**Pycnoscelus surinamensis** (Linnaeus)

1767. [*Blatta*] *surinamensis* Linnaeus, Syst. Nat., ed. XII, p. 687. [Surinam.]

Las Mesitas, Cundinamarca, V, 1918, 3 ♀.

This species, though not strictly domiciliary, is more often encountered about human habitations than elsewhere, and its wide distribution in tropical and subtropical America is, in all probability, largely due to its carriage by human agencies.

**Panchlora cubensis** Saussure

1862. *P[anchlora] cubensis* Saussure, Rev. et Mag. de Zool., (2), XIV, p. 230. [♀, Cuba.]

1919. *Pycnosceloides aporus* Hebard, Trans. Am. Ent. Soc., XLV, p. 300, figs. 1 and 2. [♀ [juv.]: Brownsville, Texas and Monte Diablo, California; Orizaba, Motzorongo and Minatitlan, Vera Cruz, Mexico; Pózo Azûl de Pirris, Costa Rica; Porto Bello, Alhajuela, Rio Chilibre, Rio Trinidad, Cabima and Corozal, Panama.]

We hasten to place our genus *Pycnosceloides* in synonymy under *Panchlora*, and the single described species, *aporus*, as a synonym of *cubensis*.

Breeding experiments, undertaken by us recently in Colombia, proved that the dark brown apterous individuals, upon which we based our description of a new genus and species, are no more than the immature condition of the present species, adults of which are a very pale green, with fully developed tegmina and wings. The size of immatures, which in the last instar is frequently as large as that of many adult females of the species, the coloration, very different and widely separated eyes, truncate pronotum and heavily chitinous supra-anal plate, led us into this deplorable error, from which the similarity of limb armament might possibly have saved us, had it been noted at the time.

Santa Marta, Magdalena, X, 1917, (M. A. Carriker, Jr.), 1 ♀.

Mamatoco, Magdalena, XII, 1917, (M. A. Carriker, Jr.), 2 ♂.

Muzo, Boyacá, IX, 1918, (from A. Maria), 1 ♀.

Villavicencio, Intendencia del Meta, (from A. Maria), 34 ♂, 16 ♀.

Rio Chili, affluent of the Rio Cauca, XII, 1918, (from A. Maria), 3 ♂, 5 ♀.

Individual size variation is very slight in the Villavicencio and Rio Chili series. The latter material averages larger for both sexes.

**Panchlora exoleta** Burmeister

1838. P[*anchlora*] *exoleta* Burmeister, Handb. Ent., II, abth. II, pt. I, p. 507. [Pará and Bahia, Brazil.]

Villavicencio, Intendencia del Meta, (from A. Maria), 32 ♂, 19 ♀.

We are uncertain as to whether the material, recorded from Bogotá as this species,[41] was actually secured at that locality.

**Achroblatta luteola** (Blanchard)

1843. *Blatta luteola* Blanchard, in d'Orbigny, Voy. Amér. Mérid., VI, pt. 2, p. 215, pl. 26, fig. 3. [Santa Cruz, Bolivia.]

Villavicencio, Intendencia del Meta, (from A. Maria), 1 ♂.

This is a small specimen; length of body, 13; length of pronotum, 4.2; width of pronotum, 5.2; length of tegmen, 15.1 mm.

Combined with its form the light brown coloration of this insect, with latero-cephalic portions of pronotum and three marginal patches of buffy on the tegmina, give it some resemblance to certain species of the Lampyridae (Coleoptera).

**Phortioeca apolinari** new species (Plate X, figures 33 and 34.)

This striking species is readily distinguished from the known members of *Phortioeca* by its smaller size, less strongly produced meso-cephalic cucullate portion of the pronotum, paler general coloration and striking color pattern.

*Type.*—♂; Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. September, 1918. (From A. Maria.) [Hebard Collection, Type no. 670.]

Size smaller than the other known species of *Phortioeca*, form similar. Head flattened, rather small, eyes separated by a distance slightly less than half that between the rather large ocellar spots. Pronotum extending well beyond head and cucullate in meso-cephalic portion, this portion defined from the elevated lateral and caudal portions by a distinct sulcus, the caudal portions briefly, broadly and flatly ridged longitudinally between the slightly more decided ridges at the humeral shoulders; surface polished, with well scattered rugae, particularly in the more elevated portions, with impressed punctae meso-caudad; cephalic margin decidedly cingulate, showing an extremely weak emargination on each side, due to the moderate production of the meso-cephalic portion, which is not as decided as in the other species; latero-caudal angles rounded, not sharply angulate, at slightly over ninety degrees; caudal margin oblique and very broadly convex to the humeral angles, between these transverse with a minute and brief, but distinct, angulate production mesad.

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[41] Mem. Am. Ent. Soc., no. 4, p. 107, (1920). The present series is discussed and *exoleta* compared with *cubensis* on the preceding page.

Tegmina and wings fully developed, broad, extending well beyond apex of abdomen; wings differing from those of *P. phoraspoides* (Walker) in having the transverse veinlets between the discoidal and median veins more numerous and delicate, the ulnar vein sending a few branches toward the median vein. Abdomen as characteristic of genus.

Cephalic femora rather slender, with the characteristic parallel dorsal and ventral margins found in the species of this and related genera; ventro-cephalic margin supplied distad with widely placed, microscopic, rather short, spiniform hairs, with a single very short, stout but greatly atrophied distal spine; ventro-caudal margin unarmed, except for a similar distal spine. Other ventral femoral margins completely unarmed, the caudal margins moderately supplied with microscopic hairs. Tarsal joints short and stout, metatarsus unarmed and supplied with a large pulvillus, which extends to near its base, three succeeding joints with ventral surfaces fully occupied by large pulvilli. Moderately large arolia present between the heavy bases of the simple, symmetrical, strongly curved tarsal claws.

*Allotype.*—♀; same data as type. [Hebard Collection.]

Very similar to male, size slightly larger, form broader. Pronotum with production of cucullate portion even less decided, so that the cephalic margin shows scarcely any emargination. Abdomen as characteristic of genus.

General coloration similar in the sexes. General dorsal coloration shining cinnamon buff. Pronotum beautifully pictured with blackish brown as figured, cingulate cephalic margin russet. Tegmina with humeral trunk broadly blackish brown, veins of the same coloration, these becoming much less conspicuous toward the costal margin and distad; proximal portions of anal and marginal fields conspicuously pale, the impressed punctae there seen, under the microscope, to be brown. Ventral surface of pronotum cinnamon-buff, with a large square suffusion of blackish brown laterad toward the latero-caudal angles, the tegmina with a smaller suffusion on their ventral surfaces toward the base of the marginal field. Head blackish brown, ocelli cream color, antennae uniform dark brown. Ventral surface ochraceous-buff, the coxae and lateral portions of abdomen heavily suffused with bister, four abdominal sternites with patches of ochraceous-buff in the center of the suffused area on each side. Cerci bister. Limbs ochraceous-buff, with cephalic femora entirely, and other femora dorsad and ventro-distad, heavily suffused with bister, spines mars brown.

*Measurements (in millimeters)*

| | Length of body | Length of pronotum | Width of pronotum | Length of tegmen | Width of tegmen |
|---|---|---|---|---|---|
| ♂ | | | | | |
| Villavicencio, *type*........ | 25 | 7.7 | 12.1 | 26.8 | 10.4 |
| Villavicencio, *paratype*..... | 25 | 7.3 | 12 | 25.7 | 10.3 |
| ♀ | | | | | |
| Villavicencio, *allotype*..... | 29 | 8.3 | 13.8 | 27.7 | 11.6 |
| Villavicencio, *paratype*..... | 28.8 | 8.1 | 13 | 27.7 | 11.2 |
| Susumuco, *paratype*....... | 28.4 | 7.8 | 12.7 | 25.9 | 10.6 |

In addition to the described pair, a male and female paratype, bearing the same data, and a male paratype taken at Susumuco, Cundinamarca, elevation 2600 feet, September, 1917, also from A. Maria, are before us, as well as a large juvenile female, taken at Villavicencio in July, 1918.

**Phortioeca phoraspoides** (Walker)

1871. *Zetobora phoraspoides* Walker, Cat. Dermapt. Saltat. Br. Mus., v, Suppl. Blatt., p. 8. [♂; Chontales, Nicaragua.]

Muzo, Boyacá, II, 1919, (from A. Maria), 3 ♂.

Villavicencio, Intendencia del Meta, 1919, (from A. Maria), 1 ♀.

This splendid species, known previously only from Central America, is readily distinguished from the preceding by the larger size, solidly black major portion of the more cucullate pronotum, with broad cephalic margin ochraceous-buff mesad and ferruginous or vinaceous-rufous in lateral portions.

The female agrees fully with Central American females before us, except in having the organs of flight as fully developed as in the males and the tegmina less heavily suffused with blackish brown.

**Capucina patula** (Walker)

1871. *Zetobora patula* Walker, Cat. Dermapt. Saltat. Br. Mus., v, Suppl. Blatt., p. 8. [♂; Chontales, Nicaragua.]

Muzo, Boyacá, II, 1919, (from A. Maria), 1 ♂, 1 ♀.

This wood brown roach is distinctive in its very delicate structure, greatly flattened form and very broad tegmina. It has previously been reported only from Nicaragua and Costa Rica.

Compared with a Costa Rican series before us, the present pair is found to agree closely. The pronotum in these specimens is decidedly narrower than in the majority of the other series, that series showing, however, that the pronotum and tegmina are subject to decided variation in width, one Costa Rican female having the pronotum slightly narrower than that of the Colombian female at hand, the largest Costa Rican male showing, however, the following proportions: length of body, 29.2; length of pronotum, 9.8; width of pronotum, 17.3; length of tegmen, 27.4; width of tegmen, 13.5 mm.

The measurements for the pair here recorded are; length of body, ♂ 28.8, ♀ 28.8; length of pronotum, ♂ 8.6, ♀ 8.6; width of pronotum, ♂ 14, ♀ 15; length of tegmen, ♂ 26.3, ♀ 25,7; width of tegmen, ♂ 12, ♀ 12.3 mm.

**Capucinella delicatula** Hebard

1919. *Capucinella delicatula* Hebard, Mem. Am. Ent. Soc., no. 4, p. 111, pl. VI, figs. 2 and 3. [♂; Porto Bello, Panama: ♀; San Lorenzo, Sierra Nevada de Santa Marta, Colombia.]

In addition to the female type, we have before us four very small immature individuals, bearing the same data.

The male of this species suggests somewhat a very small, much paler, diaphanous replica of *Capucina patula* (Walker). The female, however, is a small patelliform insect, lacking entirely organs of flight and showing some similarity to immature individuals of *patula*, though with margins by no means as broadly lamellate.

### BLABERINAE

**Archimandrita tessellata** Rehn

1903. *Archimandrita tessellata* Rehn, Trans. Am. Ent. Soc., XXIX, p. 287. [♂; San Carlos, Costa Rica.]

1903. *Archimandrita marmorata* Rehn (in part not *Blatta marmorata* Stoll, 1813), ibid., p. 287. [♀, Colombia.]

The differences separating this species from *marmorata* have been fully discussed by Hebard.[42]

The specimen recorded from Colombia by Rehn was presented to the Academy of Natural Sciences of Philadelphia, June 2, 1857, by R. W. Mitchell, with the data "New Granada." It is probable that the specimen came either from Panama or from the Rio Atrato drainage. We are, therefore, unable to record definitely this species from Colombia as now limited.

**Blaberus giganteus** (Linnaeus)

1758. [*Blatta*] *gigantea* Linnaeus, Syst. Nat., ed. X, I, p. 424. [America.]

1802. *Blatta colossea* Illiger, Mag. Insektenkunde, I, p. 186. [Demerara [= British Guiana].]

Espinal, Tolima, IV, 1918, (from A. Maria), 1 ♀.

Susumuco, Cundinamarca, VI, 1917, (from A. Maria), 1 ♀.

From study of the material in the Philadelphia Collections, as well as specimens recently received from the Guianas, we are finally convinced that *B. colosseus* (Illiger) was based on a mere individual variation of *giganteus,* unworthy of nominal recognition.

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[42] Mem. Am. Ent. Soc., no. 4, p. 113, (1920).

**Blaberus parabolicus** Walker

1868. *Blabera parabolica* Walker, Cat. Blatt. Br. Mus., p. 8. [♂; Cuenca, [Ecuador].]

Villavicencio, Intendencia del Meta, IX, to XII, 1918 and 1919, (from A. Maria), 8 ♂, 9 ♀, 13 juv.

Rio Guatiquia, Intendencia del Meta, VI, 1917, (from A. Maria), 1 ♂, 2 ♀.

Susumuco, Cundinamarca, IX, 1917, (from A. Maria), 2 juv.

**Blaberus discoidalis** Serville

1839. *Blabera discoidalis* Serville, Hist. Nat. Ins., Orth., p. 76. [♀, Santo Domingo.]

Santa Marta, Magdalena, X, 1907, (M. A. Carriker, Jr.), 1 ♂, 1 juv.

Mamatoco, Magdalena, XII, 1917, (M. A. Carriker, Jr.), 3 ♂, 2 juv.

Honda, Tolima, IV, 1918, (from A. Maria), 1 ♀, 2 juv.

Espinal, Tolima, IV, 1918, (from A. Maria), IV, 1918, 1 juv.

Susumuco, Cundinamarca, IX and X, 1917, (from A. Maria), 6 ♂, 1 ♀, 1 juv.

Villavicencio, Intendencia del Meta, VII and IX, 1918, (from A, Maria), 2 ♂.

Of the series those from Mamatoco are the largest, and those from Susumuco the smallest. The female from Honda shows decidedly the strongest intensification of coloration, with area between anal field and discoidal vein to median point on tegmina very heavily suffused with blackish brown. Every variation occurs to the more usual condition, in which the humeral trunk only, to opposite the apex of the anal field, is heavily suffused with blackish brown.

Juveniles of this species have the occiput and inter-ocular-ocellar area dark brown, rarely showing traces of buffy on the former and narrowly margining the eyes. Those of *parabolicus* are in general very similar, but have the occiput buffy in a usually extensive area, this color broadly bordering the eyes to the ocellar area.

### CORYDIINAE

**Hypercompsa anolaima** new species (Plate X, figure 35.)

This species is very similar to the Brazilian *H. fieberi* (Brunner) in general appearance, differing signally in having the anal field divided by a heavy longitudinal vein.

*Type.*—♂; Anolaima, Cundinamarca, Colombia. Elevation, 5964 feet. April 6, 1917. (From A. Maria.) [Hebard Collection, Type no. 679.]

Size medium for this genus of very small species, form stout, tegmina and wings projecting well beyond apex of abdomen. Head with minute but distinct ocelli. Pronotum decidedly transverse, the width decidedly greatest caudad; latero-cephalic angles very broadly rounded and showing weak angulation, latero-caudal angles very broadly rounded without angulation; cephalic margin straight, transverse; caudal margin transverse, almost straight, showing very broad and feeble convexity. Tegmina and wings fully developed, venation apparently as characteristic of genotype, except that the anal field is divided by a nearly straight, heavy, longitudinal vein, forming an elongate subrectangulate area with the proximal two-thirds of the anal sulcus and a slightly subtriangular area with the sutural margin and remaining portion of the anal sulcus. Cerci with (eight in Panamanian specimen, damaged in type) strongly defined rounded joints. Supra-anal plate delicate, sub-bilobate. Subgenital plate with surface convex; weakly produced laterad, bearing at each apex a simple and comparatively large, straight style, between which the distal margin of the plate is rather strongly concave. Antennae, limbs, their armament, pulvilli and arolia apparently as characteristic of genus.

*Allotype.*—♀; same data as type. [Hebard Collection.]

Size decidedly larger, form slightly more robust than male. Supra-anal plate with free margin evenly convex. Subgenital plate with surface convex, deeply acute-angulate emarginate in meso-distal quarter, this area occupied by two valves, with surfaces very weakly concave, separated by a medio-longitudinal cleft.

General coloration blackish brown, this including head, ventral surface, opaque portions of tegmina and wings and greater portion of antennae, pronotum and dorsal surface. Antennae blackish brown, with four of the distal joints (twenty-fourth to twenty-seventh) buffy, forming a broad pale annulus. Pronotum blackish brown, broadly bordered with ochraceous-buff at latero-caudal angles, these areas narrowing along caudal margin, so that mesad they are subobsolete. In the Panamanian specimen before us, these areas are not as decidedly narrowed mesad, so that the caudal margin is narrowly but distinctly bordered with this color throughout. Dorsal surface of abdomen blackish brown, except that the latero-caudal portions of the median segment are narrowly whitish.[43]

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[43] This narrow transverse whitish area on each side is not to be confused with the large whitish latero-proximal spots found on the abdomen of *H. cynipsoides* Walker, of which species material is now before us.

In addition to the described pair, a female of this species from Porto Bello, Panama, taken February 24, 1911, by A. Busck is before us,[44] property of the United States National Museum.

### PERISPHAERIINAE

This subfamily, as far as the assigned American forms are concerned, is at present decidedly unsatisfactory. The first group including *Dasyposoma* and its allies, as recently assigned by us[45], is, from the material here studied, found to represent, at least in part, merely the juvenile condition of species belonging to the group containing *Hormetica* and its allies. As to that group, it appears very possible that it should be considered an aberrant complex, referable to the Blaberinae and not to the Perisphaeriinae.

The characters used to separate the Blaberinae and Panchlorinae are, however, also unsatisfactory, and general revisionary treatment is much needed. At present we are able to state definitely that *Hormetica* and *Parahormetica* are very closely allied genera, as indicated by Kirby, certainly not referable to different subfamilies, as assigned by Brunner.

**Hormetica subcincta** (Walker)

1868. *Brachycola subcincta* Walker, Cat. Blatt. Br. Mus., p. 188. [♂, Colombia.]

Susumuco, Cundinamarca, X, 1918, (from A. Maria), 1 ♂.

Villavicencio, Intendencia del Meta, XII, 1918 and 1919, (from A. Maria), 2 ♂, 1 ♀.

The previously unknown female agrees in all respects with the males, except in contour and coloration of the pronotum. In this sex the pronotum is convex, showing no decided meso-lateral projections of the disk, with lateral margins very heavily cingulate as in the male, but not at all reflexed above the head. In coloration the pronotum is ochraceous-buff, with two very large meso-lateral patches of blackish brown, these each containing a moderately large, irregularly rounded area of ochraceous-tawny in the position of the striking pale spots of the male, and caudad of these a small patch of ochraceous-tawny on each side. The blackish brown areas are each connected with the caudal margin by a short but broad band, that margin being broadly margined with that color in its median half.

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[44] Recorded by Hebard as *H. fieberi* (Brunner), Mem. Am. Ent. Soc., no. 4, p. 119, (1920).

[45] Trans. Am. Ent. Soc., XLV, p. 119, (1919).

This is easily one of the handsomest species of the South American Blattidae.

**Hormetica apolinari** Hebard

1919. *Hormetica apolinari* Hebard, Trans. Am. Ent. Soc., XLV, p. 128, pl. XVIII, fig. 4, pl. XIX, fig. 7. [♂, ♀; Fusagasugá, Cundinamarca, Colombia.]

New York quarantine, VI, 30, 1904, (H. B. Shaw; in orchids shipped from Puerto Colombia, Atlantico, Colombia), 1 medium small juv.

Muzo, Boyacá, IX, 1918, (from A. Maria), 1 ♂.

Susumuco, Cundinamarca, IX, 1917, (from A. Maria), 3 ♂, 1 ♀.

Villavicencio, Intendencia del Meta, IV to VIII, 1918 and 1919, (from A. Maria), 6 ♂, 7 ♀, 1 large juv. ♂, 1 large juv. ♀, 1 medium small juv.

Comparison of material before us, unquestionably assignable to *Dasyposoma* Brunner, as at present understood in the literature, with adults of *Hormetica apolinari*, shows beyond question that the material actually represents the immature condition of this species.

Further investigation convinces us that Saussure's *Dasyposoma marmorata*, described from a female from Venezuela,[46] which specimen was later recorded as from Colombia,[47], is an immature of a species of *Hormetica* closely related to *apolinari*. From the description we find that *marmorata* is, in the described immature condition, contrastingly colored, with head yellow, bearing a transverse band of fuscous.

Juveniles of the present species have the head blackish brown, the vertex to just above the ocelli yellowish, the delimiting of these areas obscure in these stages, but very sharply defined in adults. In all the immature stages before us the pronotum has two narrow marginal patches of yellowish on the cephalic margin each side of the head, the antennae with several whitish joints before the terminal joints. In the earlier stages individuals are otherwise solidly very dark blackish brown, in the later stages not quite so dark, sometimes with a more reddish tinge and with a paler, broadly crescentric and very weakly defined large area of russet meso-caudad on the pronotum.

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[46] Rev. et. Mag. de Zool., (2), XXI, p. 113, (1869).

[47] Miss. Sci. Mex., Rech. Zool., VI, p. 122, (1870).

From the description and figures of *nigra* Brunner, genotype of *Dasyposoma,* it appears probable that that species is based on an immature of some species of *Hormetica.* It will be impossible to determine this definitely until the type, or similar Brazilian material, has been studied.

One feature of particular interest is that arolia are not developed until the adult condition is reached. The absence of arolia in the adult condition of *Parahormetica* led Brunner to place that genus in the Blaberinae. As we have noted above, it is certain that these two genera are very closely related and possibly not referable to the Perisphaeriinae, as assigned by Kirby and generally in contemporary literature.

Considerable size variation is shown by the present series.

*Measurements (in millimeters) of extremes*

| ♀ | Length of body | Length of pronotum | Width of pronotum | Length of tegmen | Width of tegmen |
|---|---|---|---|---|---|
| Susumuco (3).. | 34–36.8 | 12.8–13.7 | 16.2–18.4 | 25.8–26.7 | 14–14.3 |
| Villavicencio (6).......... | 25.7–39.5 | 10.7–12.7 | 13.7–17.2 | 21.3–27.2 | 11.6–15.1 |
| ♂ | | | | | |
| Susumuco..... | 37.5 | 12.2 | 16.6 | 23.8 | 13.7 |
| Villavicencio (7).......... | 28.8–31.5 | 10–11.1 | 13.3–15 | 19–21.8 | 10.3–12 |

In one male and one female, two very slightly paler antennal joints distad show a partial survival of the pale antennal annuli evident in the juveniles.

## MANTIDAE[48]

### ORTHODERINAE

**Choraedodis rhombicollis** (Latreille)

1833. *Mantis rhombicollis* Latreille, in Humboldt and Bonpland, Recueil Obs. Zool. et Anat. Comp., II, p. 103, pl. XXXIX, figs. 2 and 3. (No locality given.)

Andagoya, Antioquia, IV, 10, 1918, (M. A. Carriker, Jr.), 1 ♂.

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[48] In the present paper we follow the same arrangement of the Mantidae given in our first Colombian study, not the more recent revised arrangement of Giglio-Tos, which, though on the whole more logical and satisfactory, shows numerous serious defects.

The present specimen of this large green mantid, with pronotum enormously dilated laterad, agrees fully with Central American males of the species before us. In this individual the pronotal proportions are: length, 24; greatest width, 30.7 mm.

### MIOPTERYGINAE

**Pseudomiopteryx bogotensis** Saussure

1870. *P[seudomiopteryx] bogotensis* Saussure, Mittheil. Schweiz. ent. Gesellsch., III, p. 228. [♂; Bogotá, Colombia.]

Mamatoco, Magdalena, XII, 1917, (M. A. Carriker, Jr.), 1 juv. ♀.

**Musonia surinama** (Saussure)

1869. *Th[espis] surinama* Saussure, Mittheil. Schweiz. ent. Gesellsch., III, p. 70. [♂, Surinam.]

Cincinnati, Sierra San Lorenzo, Magdalena, 4000 to 5000 feet, VII, 10, 1913, (M. A. Carriker, Jr.), 2 ♂, 1 ♀.

### THESPIS Serville[49]

1831. *Thespis* Serville, Ann. Sci. Nat., XXII, p. 54.
1916. *Diamusonia* Giglio-Tos, Bull. Soc. Ent. Ital., XLVII, p. 6.

The type of *Thespis* was first selected by Rehn as *parva* (Olivier),[50] which name is based on the quoted description of *Mantis minuta* Drury. Most unfortunately Kirby was unable (in 1904), and Giglio-Tos failed in his more recent studies, to note this type fixation. Thus Kirby has attempted to fix the type of *Oligonyx* as this same species,[51] but, as *parva* was originally referred with a query to *Oligonyx*, that type fixation was void and has no effect on the nomenclature involved.

Giglio-Tos points out this fact, selects validly the type of *Oligonyx* as *bicornis* Saussure,[52] but, overlooking Rehn's type fixation for *Thespis*, selects as genotype of his new genus *Diamusonia* the same *parva* (Drury).[53] Thus *Diamusonia* falls as a synonym of *Thespis*.

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[49] The synonymy here discussed was first indicated by Rehn, Proc. Acad. Nat. Sci. Phila., 1920, p. 226, footnote 11, (1920).

[50] Proc. U. S. Nat. Mus., XXVII, p. 565, (February, 1904).

[51] By a lapsus calami giving *parva* of Drury, in error for *minuta*. Syn, Cat. Orth., I, p. 278, (November or later in 1904).

[52] Bull Soc. Ent. Ital., XLVI, p. 191, (1915).

[53] Following Kirby in giving *parva* by mistake for *minuta*.

**Thespis metae** new species (Plate IX, figure 23.)

This species apparently shows nearest affinity to *T. media* (Giglio-Tos),[54] the male here described differing in its slightly smaller size, slightly deeper head, broader and more strikingly marked tegmina, proportionately more elongate tegmina and wings, of which the latter reach to the base of the supra-anal plate, very slightly shorter supra-anal plate and other less conspicuous features.

*Type.*—♂, Villavicencio, Intendencia del Meta, Colombia. Elevation, 1400 feet. October, 1919. (From A. Maria.) [Hebard Collection, Type no. 724.]

Size medium large compared with related species, small for the genus; form slender. Head with greatest depth three-quarters of greatest width; occipital outline in portion of occiput between eyes and the decided juxta-ocular sulci strongly convex, these portions raised above the eyes, the intervening median portion of the occiput as high mesad and slightly higher laterad, its dorsal outline weakly convex laterad and mesad, weakly concave meso-laterad on each side. Lateral ocelli slightly larger than median ocellus, the triangle which they form three-fifths as deep as wide. Facial scutellum very strongly transverse, about four times as wide as its median depth, its dorsal margin broadly convex, this margin rounded and not sharply defined.

Pronotum very elongate, its greatest width contained about four times in length of shaft; shaft with margins subparallel, scarcely narrowing to the supra-coxal expansion, the latter moderate, forming rounded obtuse-angulations, the collar narrower than shaft with margins nearly parallel beyond convergence caused by supra-coxal expansion. Lateral margins of pronotum minutely denticulate, the denticulations finer than in *media*, shaft with a distinct and rather decided medio-longitudinal carina, this carina very fine, subobsolete, on the collar; collar with rounded lateral carinae, the surface delicately concave above and below these.

Tegmina elongate, failing to reach apices of wings by a brief distance; broad, decidedly broader than in *media*, apex rather broadly rounded; marginal field thickly and minutely areolate, discoidal and anal fields with false veinlets between the veins, which with the cross-veinlets form large irregular areolae. Tegmina and wings microscopically very finely pilose, this coarser on the costal margins.

Supra-anal plate elongate triangular, length twice basal width, apex acute, dorsal surface with a very delicate medio-longitudinal carina. Cerci elongate, flattened, very hairy, the joints increasing in length distad, the distal joint bluntly rounded and over three times as long as its proximal width.

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[54] Our comparison is made, with the brief original description, of a male from Trinidad, and a male from Caparo, Trinidad, taken in August, 1913, by S. M. Klages, in the Hebard Collection.

Subgenital plate slightly longer than basal width, styles elongate, flattened margin weakly convex and slightly over half as long as one of the styles.

Cephalic coxae slender, strongly carinate, unarmed. Cephalic femora with ventro-external margin armed with four, and one genicular, spines; ventro-internal margin with the following spine formula, ıIıIıIıIııııII. Cephalic tibiae with five external and ten internal spines on the ventral margins, which increase gradually in size and length distad. Median and caudal femora feebly sulcate dorsad to near extremities and with ventro-caudal margins strongly carinate.

Head snuff brown suffused with blackish, the dorsal margin of the occiput narrowly but conspicuously pinkish buff. Pronotum dull tawny olive with microscopic flecks and lateral lines of blackish, the margins and teeth paler, appreciably pinkish buff. Tegmina transparent, weakly tinged with tawny olive, costal margin slightly paler, mediastine and humeral veins microscopically margined with blackish, cross-veinlets of humeral field all in very brief portions at the true veins blackish (except at the ulnar and first branch of the median vein), these flecks conspicuous and reproduced in the homologous portions of the wing, but there obsolete proximad at the median vein and weak at that vein distad. Wings transparent, iridescent, showing scarcely any brown tinge except from the humeral vein to the costal margin, where they are weakly tinged with tawny olive. Abdomen dorsad clay color, microscopically streaked with darker brown, ventral surface clay color deepening to bister laterad. Limbs tawny olive suffused with bister, this heavier on their external faces.

Length of body, 46.7; width of head, 3.8;length of pronotum, 12.7; length of pronotal shaft, 9.1; width of pronotal supra-coxal expansion, 2.3; least width of pronotal shaft, 1.8; length of tegmen, 30; greatest width of tegmen, 6.3; length of wing, 26.1; length of cephalic coxa, 7.8; length of cephalic femur, 9.3; length of caudal femur, 17; length of caudal tibia, 16.3; length of caudal tarsus, 8.7; length of caudal metatarsus, 6.3 mm.

The type is unique.

**Pseudomusonia**[55] **lineativentris** (Stål)

1877. *M*[*usonia*] *lineativentris* Stål, Bih. till K. Svenska Vet. Akad. Handl., v, no. 10, p. 66. [♂, Colombia.]

Andagoya, Antioquia, IV, 22, 1918, (M. A. Carriker, Jr.), 1 juv. ♂.

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[55] Proposed by Werner (Verh. k. k. Zool.-bot. Ges. Wien, LIX, p. 78, (1909)) to take the place of *Mionyx* Saussure, 1892, preoccupied by *Mionyx* Cope, 1886, a genus of lizards.

## CARRIKERELLA[56] new genus

This genus is related to *Pogonogaster* Rehn, belonging to that section of the Miopteryginae, as previously understood, which we believe Giglio-Tos has rightly separated as the Oligonicinae. In the great majority of features these genera agree closely, *Carrikerella* being strikingly distinguishable by having on the head a heavy cylindrical horn mesad above the ocelli, with apex bifurcate, while all of the pronotal and abdominal projections, and particularly those of the proximal abdominal tergites, are less highly specialized.

No other Oligonicine is known having the head with vertex produced, this being a feature frequent in Old World Empusids and Creobrotrids, and found in the one South American member of the latter subfamily, *Callibia diana* (Stoll), in which species this production is similar, except in being much heavier, higher in position, not carinate dorsad and more shallowly bifid at the apex.

The genus is monotypic. Genotype.—*Carrikerella ceratophora* new species.

*Description of Genus.*—(Female alone known.) Head apparently[57] slightly broader than deep, occiput raised above eyes, its outline nearly straight, showing very feeble convexity, with well rounded juxta-ocular portions which are more elevated than in *Pogonogaster;* frons bearing a heavy cylindrical horn, which has a delicate longitudinal carina dorsad and is bifid at apex; ocelli minute; facial scutellum moderately transverse (depth one-third width in *Carrikerella,* scarcely more than one-quarter width on *Pogonogaster*), its surface with a weak vertical median carina terminating near the ventral margin in a small node.

Pronotum very elongate, very feebly sigmoid in lateral aspect, supra-coxal expansion moderately well developed; dorsal surface of collar bearing a meso-proximal node and a median swelling; shaft with a distinct medio-longitudinal carina and a paired node

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[56] In honor of our friends, Mr. and Mrs. M. A. Carriker, Jr., on one of whose field trips, to secure additional knowledge of the Ornithology of northern South America, the specimen upon which the present remarkable genus is based, was taken.

[57] The eyes are crushed somewhat in the only specimen available.

at the caudal margin; lateral margins of pronotum irregularly denticulate. Mesonotum and metanotum with tegminal and wing pads distinct, produced, and with a distinct medio-longitudinal carina, this carina forming with the caudal margin a small acute raised projection meso-caudad on each of these segments. Median segment with a similarly formed but larger, yet small and foliaceous plate meso-caudad, three succeeding tergites weakly carinate medio-longitudinally and similarly specialized meso-caudad, the remaining tergites with specialization weaker, similar to but more decided than that of metanotum; four proximal tergites produced latero-caudad in rounded lamellae, these smaller for the two succeeding tergites and much smaller for the two following these.

Supra-anal plate elongate trigonal, weakly carinate medio-longitudinally, with apex rather broadly rounded. Cerci moderately stout, not extending beyond apex of supra-anal plate, with joints well defined. Subgenital plate as in females of *Pogonogaster*, except that the cleft distal portion is not differentiated proximad from the proximal portion by a transverse depression.

Limbs and their armament as in *Pogonogaster.* Cephalic coxae with dorso-external margin microscopically denticulate, dorso-internal margin showing this condition even weaker, conspicuously lobulate distad. Cephalic femora slender, with three elongate discoidal spines, ventro external margin minutely denticulate and armed with four elongate spines, in addition to a small genicular spine; ventro-internal margin, in addition to a small genicular spine, with seven elongate spines, of which the second is much the longest. Cephalic tibiae armed proximad on ventro-internal margin with two minute spines,[58] curved distad, followed by a very elongate heavy spine, with a single spine of about half that size distad on ventro-external margin, externally distad with a similar spine mesad and a larger more curved spine dorsad. Caudal metatarsus longer than combined length of succeeding joints.

[58] The type of *Pogonogaster tristani* Rehn shows one of these spines on one of the cephalic tibiae, the other lacking armament in this area. That individual may prove to be a specimen abnormal in this respect.

**Carrikerella ceratophora** new species (Plate IX, figures 24, 25, and 26.)

Though having the abdominal appendages less decidedly and remarkably specialized than in the species of *Pogonogaster*, this insect, showing a similarly juvenile-appearing facies, is very remarkable in the bifid horn, developed on the head above the ocelli.

The apparently fully formed genitalia in the female at hand cause us to believe that the adult condition is represented.

*Type.*—♀; Andagoya, Antioquia, Colombia. April 22, 1918. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 738.]

In addition to the characters discussed in the generic diagnosis, we note the following for this species. Size comparatively small, form slender, abdomen somewhat enlarged. Antennae very short, exceeding slightly in length the horn above the ocelli. Triangle formed by ocelli three times as broad as deep. Pronotum with dorsal surface smooth, but developed as described; supra-coxal expansion less produced than in either of the known species of *Pogonogaster*. Foliaceous meso-caudal plate of second tergite largest, that of first tergite next in size, of third tergite next, and of median segment smallest of these.

General coloration clay color; pronotum with a few weak suffusions of sepia, the heavier of the marginal spines, which are widely spaced, sepia; abdomen dorsad with numerous microscopic weak flecks and dashes of sepia, the foliaceous meso-caudal and latero-caudal plates light yellowish olive, the lateral margins of the abdomen and margins of these plates (except the caudal margins of the latero-caudal plates) with minute flecks of sepia. Cephalic coxae buffy with a greenish tinge, with two vague suffusions of tawny olive. Cephalic femora warm buff with four suffused annuli of sayal brown, the two median of which deepen to snuff brown at the dorsal margin. Caudal tibiae and tarsi warm buff, the latter with distal joints and apices of proximal joints sepia. Median and caudal limbs buffy with a greenish tinge, flecked and obscurely annulate with bister. The tinge of green shown in the foliaceous plates and limbs may indicate that this specimen, in life, was of a much more greenish coloration.

Length of body, 28; length of cephalic cone, 1.5; length of pronotum, 9.8; width of pronotum at supra-coxal expansion, 2.7; length of pronotal shaft, 6.9; width of pronotum at narrowest portion of shaft, 1.2; length of process of median segment, .9; width of process of median segment, .6; length of process of second tergite, 1.3; width of process of second tergite, .8; length of supra-anal plate, 1.4; length of cephalic coxa, 7; length of cephalic femur, 8.3; width of cephalic femur, .9; length of cephalic tibia, 2.8; length of caudal femur, 7.1; length of caudal tibia, 8.2; length of caudal metatarsus, 4.3 mm.

The type of this remarkable mantid is unique.

### CREOBROTRINAE

**Callibia diana** (Stoll)

1813. [*Mantes*] *diana* Stoll, Natuur. Afbeeld. Beschr. Spoken etc., pp. 74 and 78, pl. xxv, fig. 100. [[♀], "East Indies."[59]]

Muzo, Boyacá, II, 1919, (from A. Maria), 1 ♀.

This astonishing little mantid, with greatly produced vertex bifurcate at its apex, neck of pronotum on dorsal surface blunt conical, median and caudal femora with rounded lamellae distad on ventro-caudal margins, distinctive color pattern and bright coloration of tegmina and wings, has been previously correctly recorded from Cayenne, French Guiana; Dutch Guiana (as the synonymous *pictipennis*) and from Pernambuco and Ega, Brazil.

The present record shows that its distribution covers a very large section of tropical South America. It is apparently one of the scarcest of the American Mantidae.

### VATINAE

**Stagmatoptera septentrionalis** Saussure and Zehntner

1894. *Stagmatoptera septentrionalis* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 186, pl. VIII, fig. 2. [♀; Bugaba, Panama.]

1894. [*Stagmatoptera septentrionalis*] var. *minor* Saussure and Zehntner, Ibid., p. 187. [♀: Colombia; Venezuela.]

Boca Murindó, Intendencia del Chocó, II, 9, 1918, (M. A. Carriker, Jr.), 6 ♂.

Andagoya, Antioquia, IV, 22, 1918, (M. A. Carriker, Jr.), 1 ♂.

Muzo, Boyacá, VII and IX, 1918, (from A. Maria), 2 ♂.

Fusagasugá, Cundinamarca, X, 1918, (from A. Maria), 1 ♀.

Villavicencio, Intendencia del Meta, V, 1919, (from A. Maria), 1 ♀.

All of the features given by Saussure and Zehntner to separate their variety *minor* are attributable to individual variation, as is well shown by the Central American and Colombian series before us. We consequently place *minor* in the present synonymy.

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[59] This locality was given in error, the species subsequently having been found to be exclusively South American.

*Measurements (in millimeters) of extremes*

| | Length of body | Length of pronotum | Width of pronotum | Length of tegmen | Width of tegminal marginal field |
|---|---|---|---|---|---|
| ♂ | | | | | |
| Boca Murindó (6) | 67–70 | 22.2–24.9 | 4.6–4.8 | 46.8–50.8 | 3.1–3.8 |
| Andagoya | 65 | 23.8 | 4.7 | 48.3 | 3.4 |
| Muzo (2) | 66–75 | 24.3–27.4 | 4.8–5.1 | 50.4–59 | 3.4–3.7 |
| ♀ | | | | | |
| Fusagasugá | —— | 37.8 | 7.6 | 53 | 8.7 |
| Villavicencio | 90 | 37.1 | 8.2 | 52 | 8.8 |

The present series agrees in all important features with the Central American material at hand. The largest male, from Muzo, also shows the maximum intensive coloration. In this specimen the area of the stigma is subopaque, occupied by an irregular network of buffy veinlets. Though it is the only specimen showing this condition, we believe additional series will prove this to be an individual variation, or at least a feature of no specific or racial significance.

**Phyllovates stolli** (Saussure and Zehntner)

1894. *Theoclytes stolli* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 192. [♀: Guiana; Brazil.]

Choachi, Cundinamarca, XI, 1917, (from A. Maria), 1 ♀.

This specimen has the general coloration of the tegmina light olive green, with three suffusions and a number of flecks of bister. In the previously recorded female, from Cincinnati, Magdalena, the tegmina are sayal brown shading to isabella color on the marginal fields, the markings weakly showing in slightly darker brown.

## PHASMIDAE

### ANISOMORPHINAE

**Autolyca bogotensis** (Goudot)

1843. *Bacteria bogotensis* Goudot, Mag. de Zool., (2), V, pl. 125, figs, 1 to 11, p. 2. [♂, ♀; Bogotá, Colombia.]

Bogotá, Cundinamarca, XI, 30, 1919, (Forest Clark), 2 ♀, [U. S. N. M. and Hebard Cln.].

This shining black walking-stick, with minute, rounded, whitish, vestigial tegmina and wings, was found by Goudot to be abundant in the vicinity of Bogotá.

That author adds to his good description and excellent figures interesting data on the life history and habits of the species. It was found to be nocturnal, hiding under stones during the day. Individuals kept in captivity showed no preference for any particular food plant.

### PSEUDOPHASMINAE

**Stratocles viridis** Hebard

1919. *Stratocles viridis* Hebard, Trans. Am. Ent. Soc., XLV, p. 146, pl. XXI, fig. 1. [♀; Muzo, Boyacá, Colombia.]

Villavicencio, Intendencia del Meta, VI, 1919, (from A. Maria), 2 ♀.

These specimens agree closely in all respects with the type, except that the green of the tegmina and wings is much less brilliant and also much less extensive. Tegmina with proximal portion of humeral trunk light paris green, other portions of dorsal field suffused with dull blackish, a weak greenish tinge showing between the veins. Wings with proximal two-thirds of area between mediastine and discoidal (humeral) veins, and all of area between discoidal and median veins, light paris green, remaining dorsal portion of anterior field suffused with blackish brown, showing a subobsolete tinge of greenish between the veins. In other respects the tegmina and wings are colored exactly as in the type.

**Citrina venilia** (Westwood)

1859. *Phasma venilia* Westwood, Cat. Orth. Ins. Br. Mus., Phasmidae, p. 118, pl. XXXIII, fig. 5. [♀; Bogotá,[60] [Colombia].]

Villavicencio, Intendencia del Meta, VI, 1919, (from A. Maria), 1 ♂.

The specimen here recorded, though the apex of the abdomen is missing, is evidently a male, the first of the sex of the splendid species to be recorded.

The coloration is more brilliant than described for the type female. Head, thorax, abdomen and cephalic limbs ochraceous-buff with a tawny tinge. Other limbs of this color, except median femora in brief proximal portion and caudal femora in brief distal portion, which areas are olive yellow. Tegmina wax yellow, with areas between the sutural margin and first three veins and transverse veinlets blackish. Wings with anterior field proximad wax yellow, beyond the base in half toward costal margin paling to citron yellow, in remaining half toward radiate field rich bice green, this area from the median portion to apex suffused mesad with olive, the darker green broadening and occupying over half of the green area toward the yellow area at the apex; radiate field transparent, rich shrimp pink.

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[60] Like many of the early specimens of Natural History labelled "Bogotá," the type of this species certainly did not come from that city or its immediate vicinity. It was probably taken at a much lower altitude to the east and very possibly at, or near, Villavicencio.

Length of body, (approximated) 52; length of pronotum, 2.8, width of pronotum, 1.7; length of mesonotum, 6; length of tegmen, 4.2; length of wing, 33.3; length of cephalic femur, 16; length of cephalic tibia, 15; length of caudal femur, 13; length of caudal tibia, 12.9; length of caudal metatarsus, 5 mm.

**Pseudophasma marmoratum** (Redtenbacher)

1906. *Phasma marmorata* Redtenbacher, Insektenfamilie der Phasmiden, I Lief., p. 119. [♂, ♀; Murzo (= Muzo), [Boyacá]; Antioquia; Santa Fé de Bogotá, [Cundinamarca], Colombia: Rio Grande do Sul, [Brazil]: Cumbase, Peru: Ecuador.]

Villavicencio, Intendencia del Meta, XII, 1918, (from A. Maria), 1 ♀.

**Pseudophasma bispinosum** (Redtenbacher)

1906. *Ph[asma] bispinosus* Redtenbacher, Insektenfamilie der Phasmiden, I Lief., p. 122. [♂, ♀; Coca, Santa Inez, Ecuador.]

Susumuco, Cundinamarca, IX, 1917, (from A. Maria), 2 ♀.

Villavicencio, Intendencia del Meta, VI, 1919 and VII, 1918, (from A. Maria), 6 ♂, 5 ♀.

The largest female in the present series, from Susumuco, is 72.5 mm. in length; Redtenbacher gives 80 mm. as the length for his Ecuadorean material of this sex.

A single female from Villavicencio shows a striking color variation. In this specimen the anterior field of the wings is clay color, heavily and irregularly blotched with jagged patches of blackish bister, this increasing and almost completely suffusing the lateral portions proximad. This blotching gives the specimen a decidedly different facies, but closer examination shows it to agree in all other respects with the normal individuals of the series, in which the anterior field of the wings varies from warm sepia to bister, showing few and indistinct flecks of darker brown.

**Euphasma salpingus** (Westwood)

1859. *Phasma salpingus* Westwood, Cat. Orth. Ins. Br. Mus., Phasmidae, p. 119, pl. XXXIII, figs. 3 and 3a. [♀; Bogotá,[61] Colombia.]

Villavicencio, Intendencia del Meta, V, 1919, (from A. Maria), 1 ♂.

**Damasippus zymbraeus** (Westwood)

1859. *Dinelytron zymbraeus* Westwood, Cat. Orth. Ins. Br. Mus., Phasmidae, p. 163, pl. XV, fig. 3, a to c. [♂, ♀; Magdalena, Colombia.]

Mamatoco, Magdalena, XII, 1917, (M. A. Carriker, Jr.), 1 ♀. This is a beautiful green phasmid, with radiate field of wings white, broadly bordered distad and more narrowly caudad with blackish.

**Isagoras chocoensis** new species (Plate IX, figure 27.)

This species appears to be closely related to *I. plagiatus* (Redtenbacher), of which we have before us material, recorded as that species, from French Guiana.[62] It is probable that these species are subject to decided variation, as stated by Redtenbacher for the allied *I. phlegyas* (Westwood), but the different proportions noted for the Guianan material may indicate racial or even specific distinction. We also feel little assurance that the series upon which Redtenbacher based his *plagiatus*, from Brazil, Bolivia, Colombia and Panama, represents but one species, from what we have noted elsewhere of the general character of the work resulting in the Insektenfamilie der Phasmiden. Suffice it to say that *chocoensis* agrees in some respects more closely with the Guianan material recorded as *plagiatus*, than with Redtenbacher's description of that species.

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[61] The comment contained in footnote 60 applies to this specimen as well.

[62] Sent in exchange to the author by Chopard. This material shows the tegmina and caudal limbs decidedly shorter than the measurements given by Redtenbacher. Length of body, ♂ 51.8–53.4, ♀ 70; length of tegmen, ♂ 4.7–4.8, ♀ 7.3–7.7; length of caudal femur, ♂ 8.4–9.4, ♀ 9.7–10.8 mm.

The present male differs from the Guianan males referred to above in the proportionately longer mesonotum, with minute granules more regular and interspersed with larger granules laterad, which are more numerous and surpass in size the few homologous larger granules found in those individuals, while the tegmina are shorter, much more truncate and show a striking pale transverse band, and the limbs are heavier and proportionately more elongate.

The tegmina in their brevity show closer agreement with species of the Stratocles Division of the Pseudophasminae, but the character of the limbs indicates that *chocoensis* is a member of the Prexaspes Division. In fact the species is unquestionably a member of the genus *Isagoras*, showing apparently the maximum tegminal reduction.

*Type.*—♂; Boca Murindó, Intendencia del Chocó, Colombia. February 9, 1918. (M. A. Carriker, Jr.) [Hebard Collection, Type no. 740.]

Size medium, form very slender, much as in *plagiatus*. Head almost smooth, surface showing a few subobsolete granules; cheek one and one-third times as long as eye; ocelli prominent, forming a triangle slightly broader than deep, median ocellus distinctly smaller than lateral ocelli. Antennae extending well beyond apices of wings, segments increasing greatly in length to near distal portion, which is briefly segmented. Pronotum almost smooth, with surface showing a few subobsolete granules, transverse sulcus distinct, cephalic portion with lateral and transverse sulcus near cephalic margin distinct. Mesonotum with a distinct medio-longitudinal sulcus, surface regularly supplied with numerous minute granules and with (eight and ten) irregularly placed heavy granules on each side. Mesosternum with surface granuloso-rugulose. Tegmina short, caudal margin transverse, rounding broadly into the sutural margin, shoulders low, bluntly and evenly rounded. Wings fully developed. Distal portion of abdomen missing. Limbs unarmed. Cephalic femora compressed, with dorso-internal carina moderately elevated. Median and caudal femora with dorsal and ventral margins carinate; ventral surface medio-longitudinally carinate, this weak on median femora, strong on caudal femora. Caudal metatarsus distinctly shorter than combined length of succeeding joints. Arolia moderately well developed.

Head, pronotum and mesonotum bister, the former with a suffusion of mummy brown about the ocelli, the latter with the larger lateral granules mummy brown. Antennae mummy brown proximad, cinnamon-buff in remaining portions, with intersections of the longer joints tinged with cinnamon-buff. Tegmina proximad bister, shading to snuff brown distad, dorsad with a narrow transverse band of pinkish buff before the shoulders, laterad in all but proximo-ventral and disto-dorsal portions buffy, washed with kildare green. Wings with anterior field snuff brown, weakly mottled with bister distad and in median section, irregularly and narrowly marked with kildare green toward the costal margin; radiate field transparent, weakly tinged with saccardo's umber. Cephalic and caudal femora bister, median femora greenish buff, tibiae of all limbs deep olive buff.

Length of body, (approximated) 53; length of pronotum, 2.3; width of pronotum, 1.4; length of mesonotum, 8.3; length of tegmen, 4.1; length of wing, 27.5; greatest width of wing, 14.4; length of cephalic femur, 11.7; length of cephalic tibia, 11; length of caudal femur, 10.3; length of caudal tibia, 9.7; length of caudal metatarsus, 2.8 mm.

The type is unique.

## HETERONEMINAE

**Bacteria apolinari** Hebard

1919. *Bacteria apolinari* Hebard, Trans. Am. Ent. Soc., XLV, p. 161, pl. XIX, figs. 10 and 11. [♂; Susumuco, Cundinamarca, Colombia.]

Villavicencio, Intendencia del Meta, V, 1919, (from A. Maria), 1 ♂.

The present, somewhat larger, specimen is in a much better state of preservation than the type, measuring as follows: length of body, 109: length of head, 4; length of pronotum, 3.2; length of mesonotum, 28.8; width of mesonotum, 1.8; length of metanotum, including median segment, 18; length of median segment, 10.8; length of cephalic femur, 34.3; length of cephalic tibia, 38.8; length of median femur, 28.3; length of caudal femur, 35, length of caudal tibia, 39, length of caudal metatarsus, 7 mm.

**Libethra reservata** Brunner

1907. *Ocn[ophila] reservata* Brunner, Insektenfamilie der Phasmiden, II lief., p. 315. [♂; Bogotá, [Colombia].]

Bogotá, Cundinamarca, IX, 1918, (from A. Maria), 1 ♂.

There appears to be little question but that the specimen at hand represents the same species described by Brunner as *Ocnophila reservata*, though that author's original description is wretchedly inadequate.

Comparison shows the present individual to differ only in the slightly shorter metanotum, median segment and limbs, which differences may easily be due to carelessness in measuring the type, as Brunner's work on the genus is even more glaringly superficial and evidently hurried than elsewhere in that monograph. In our specimen the head has dark post-ocular bands, bordered dorsad by a slightly paler shade than the general pale brown and immaculate coloration of the other portions of the insect.

As we have already noted,[63] the genus *Ocnophila* Brunner was based on an aggregation of twenty-nine species, many of which represent distinct generic units. Compared with the genotype, the present insect is seen to differ in the much more elongate head and apex of subgenital plate, which shows a small but deep median emargination. The form of the head agrees fully with the usual type developed in *Libethra,* while the distal portion of the abdomen shows a similarity of general structure, though by no means as highly specialized, with distal abdominal tergite no wider than long.

As this species evidently belongs to the phylum which includes *Libethra* and not to the phylum which includes *Ocnophila* as properly restricted, we here assign *reservata* to the genus *Libethra.* Study of more material, we believe, will probably show that the insect is a member of a distinct generic unit. At the present time insufficient material is at hand to solve this problem, but we believe it best to transfer the species to the genus which includes forms of clearly nearer relationship. In fact the male before us might easily be supposed to represent some species of *Libethra* in one of the later instars preceding maturity. This, however, we believe is disproven by the well formed, strongly in-bent cerci, which in the in-bent portion taper strongly to their blunt apices and are thickly supplied with short stout chitinous teeth.

Length of body, 45; length of head, 2.8; width of head behind eyes, 1.7; length of pronotum, 2; width of pronotum, 1.6; length of mesonotum, 11.8; length of metanotum, including median segment, 7.3; length of median segment, 1.2; width of distal tergite, 1.7; length of cephalic femur, 12.3; length of caudal femur, 12.9; length of caudal tibia, 14.1; length of caudal metatarsus, 2.2 mm.

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[63] Trans. Am. Ent. Soc., XLV, p. 162, (1919). Genotype, selected at that time, *O. integra* Brunner.

## EXPLANATION OF PLATES

### Plate VIII

(External genitalic figures enlarged, other external figures and those of concealed genitalic features greatly enlarged.)

Fig. 1.—*Asemoblatta nana* new genus and species. Cephalic outline of male cephalic femur. Bogotá, Cundinamarca, Colombia. *Type.*

Fig. 2.—*Asemoblatta nana* new genus and species. Distal outline of male tarsal claw and arolium. Bogotá, Cundinamarca, Colombia. *Type.*

Fig. 3.—*Asemoblatta nana* new genus and species. Ventral outline of male subgenital plate. Bogotá, Cundinamarca, Colombia. *Type.*

Fig. 4.—*Chromatonotus andagoyae* new species. Caudal outline of production of sinistral half of paired plate beneath male supra-anal plate. Andagoya, Antioquia, Colombia. *Type.*

Fig. 5.—*Chromatonotus andagoyae* new species. Caudal outline of production of dextral half of paired plate beneath male supra-anal plate. Andagoya, Antioquia, Colombia. *Type.*

Fig. 6.—*Sciablatta mamatoco* new genus and species. Ventral view of apex of male abdomen. Mamatoco, Magdalena, Colombia. *Type.*

Fig. 7.—*Sciablatta mamatoco* new genus and species. Lateral view of male subgenital plate, showing lamellate and hinged style. Mamatoco, Magdalena, Colombia. *Type.*

Fig. 8.—*Neoblattella antioquiae* new species. Ventral view of apex of male abdomen. Andagoya, Antioquia, Colombia. *Type.*

Fig. 9.—*Ischnoptera flagellifer* new species. Ventral view of apex of male abdomen. Andagoya, Antioquia, Colombia. *Type.*

Fig. 10.—*Ischnoptera flagellifer* new species. Ventro-caudal view of male supra-anal plate and specialization of paired plate beneath. Andagoya, Antioquia, Colombia. *Type.*

Fig. 11.—*Ischnoptera implicata* new species. Ventro-caudal view of male supra-anal plate and specialization of paired plate beneath. Villavicencio, Meta, Colombia. *Type.*

Fig. 12.—*Xestoblatta micra* new species. Dorsal view of distal portion of male abdomen. Las Mesitas, Cundinamarca, Colombia. *Type.*

Fig. 13.—*Xestoblatta micra* new species. Caudal view of male subgenital plate. Las Mesitas, Cundinamarca, Colombia. *Type.*

Fig. 14.—*Xestoblatta festae* (Griffini). Dorsal view of distal portion of male abdomen. Murindo, Chocó, Colombia.

Fig. 15.—*Xestoblatta festae* (Griffini). Ventral view of apex of male abdomen. Murindo, Chocó, Colombia.

Fig. 16.—*Xestoblatta festae* (Griffini). Dorsal view of distal portion of male subgenital plate, showing the very high specialization of the styles, which are in large part hidden within the anal chamber. Murindo, Chocó, Colombia. (Magnification nearly twice that of figure 15, which includes the external aspect of this portion.)

## Plate IX

Fig. 17.—*Chromatonotus andagoyae* new species. Dorsal view of male pronotum. Andagoya, Antioquia, Colombia. *Type.* (× 7)

Fig. 18.—*Xestoblatta poecila* new species. Dorsal view of female pronotum. Villavicencio, Meta, Colombia. *Type.* (× 7)

Fig. 19.—*Euphyllodromia stigmatosoma* new species. Dorsal view of male. Andagoya, Antioquia, Colombia. *Type.* (× 3½)

Fig. 20.—*Muzoa simplex* new genus and species. Dorsal view of male. Muzo, Boyacá, Colombia. *Type.* (× 2)

Fig. 21.—*Muzoa simplex* new genus and species. Distal outline of male tarsal claws and arolium. Muzo, Boyacá, Colombia. *Type.* (Greatly enlarged.)

Fig. 22.—*Paratropes metae* new species. Dorsal view of female pronotum. Villavicencio, Meta, Colombia. *Type.* (× 4)

Fig. 23.—*Thespis metae* new species. Dorsal view of male sinistral tegmen. Villavicencio, Meta, Colombia. *Type.* (× 1½)

Fig. 24.—*Carrikerella ceratophora* new genus and species. Cephalic outline of female head. Andagoya, Antioquia, Colombia. *Type.* (× 6)

Fig. 25.—*Carrikerella ceratophora* new genus and species. Lateral view of female abdomen. Andagoya, Antioquia, Colombia. *Type.* (× $3\frac{7}{10}$)

Fig. 26.—*Carrikerella ceratophora* new genus and species. Dorsal view of first abdominal tergite of female. Andagoya, Antioquia, Colombia. *Type.* (× 4)

Fig. 27.—*Isagoras chocoensis* new species. Dorsal view of male tegmen. Boca Murindó, Chocó, Colombia. *Type.* (×4½)

## Plate X

Fig. 28.—*Asemoblatta nana* new genus and species. Cephalic outline of male head. Bogotá, Cundinamarca, Colombia. *Type.* (× 16)

Fig. 29.—*Hyporhicnoda metae* new species. Dorsal view of female. Villavicencio, Meta, Colombia. *Type.* (× 2)

Fig. 30.—*Hyporhicnoda metae* new species. Latero-internal view of female caudal tarsus. Villavicencio, Meta, Colombia. *Type.* (9½)

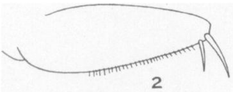
Fig. 31.—*Hyporhicnoda litomorpha* new species. Dorsal view of female. Villavicencio, Meta, Colombia, *Type.* (× 2)

Fig. 32.—*Hyporhicnoda litomorpha* new species. Dorsal view of male. Villavicencio, Meta, Colombia. *Allotype.* (× 2)

Fig. 33.—*Phortioeca apolinari* new species. Dorsal view of male. Villavicencio, Meta, Colombia. *Type.* (× 2)

Fig. 34.—*Phortioeca apolinari* new species. Dorsal outline of female pronotum. Villavicencio, Meta, Colombia. *Allotype.* (× 2)

Fig. 35.—*Hypercompsa anolaima* new species. Dorsal view of male dextral tegmen. Anolaima, Cundinamarca, Colombia. *Type.* (× 10)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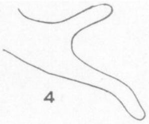
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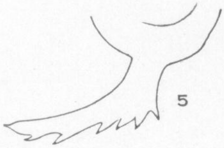
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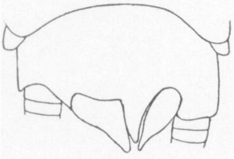
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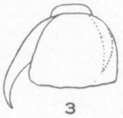
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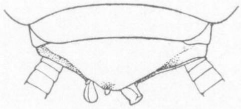
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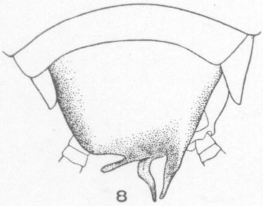
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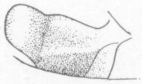
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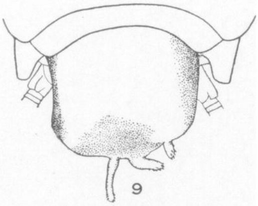
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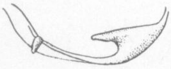
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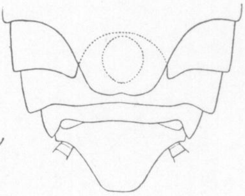
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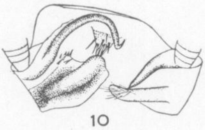
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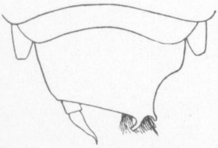
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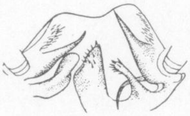
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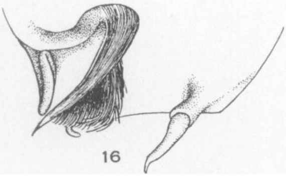
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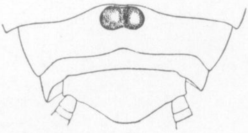
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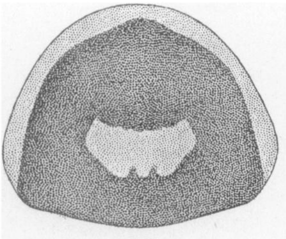
HEBARD — COLOMBIAN DERMAPTERA AND ORTHOPTERA



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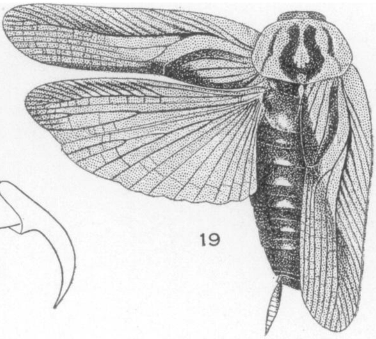

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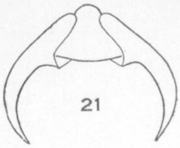

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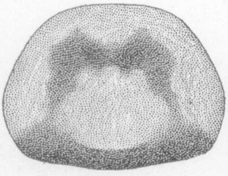

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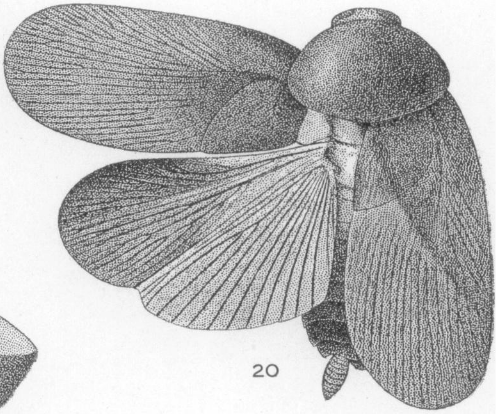

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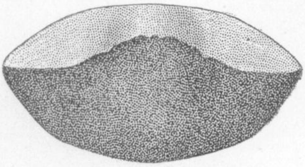

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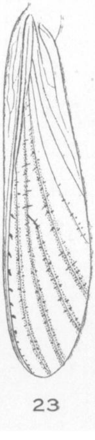

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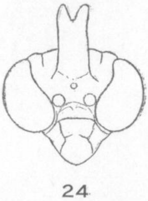

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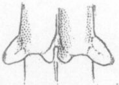

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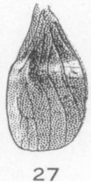

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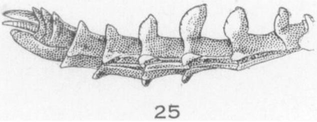

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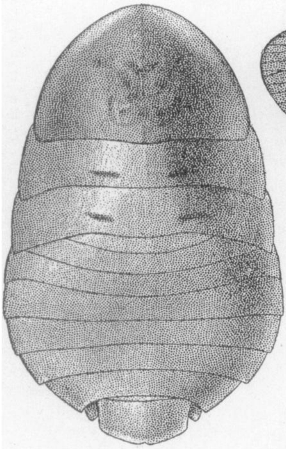

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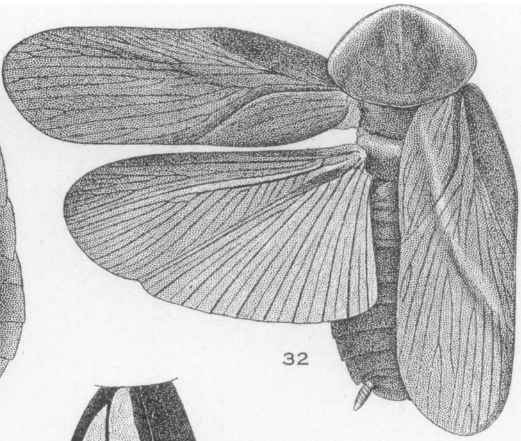

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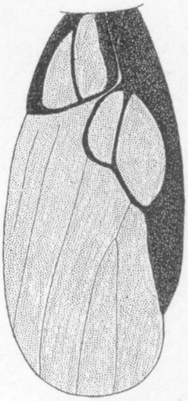

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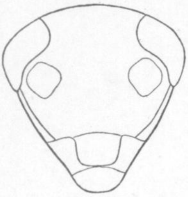

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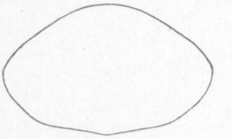

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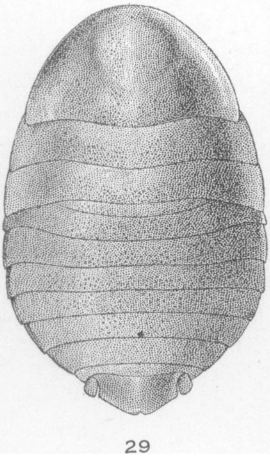

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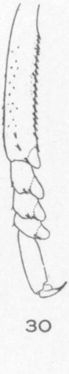

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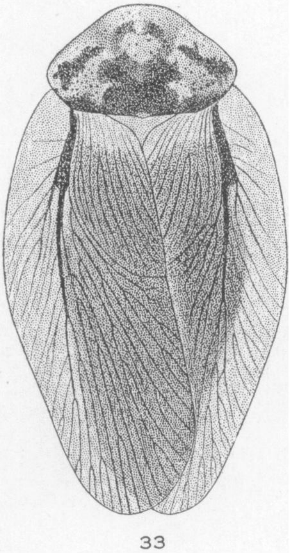

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